STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

OUTCAST

ROAD PLAN

SECTION 15, 17, 18, 29 & 32, TOWNSHIP 17 NORTH, RANGE 04 WEST, W.M.

GRAYS HARBOR COUNTY

BLACK HILLS DISTRICT

AGREEMENT NO.: 30-078809 LEAD FORESTER: JIM LE JEUNE

DATE: 05/08/06 STAFF ENGINEER: LOU BECK

DRAWN & COMPILED BY: LOU BECK

SECTION 0 – SCOPE OF PROJECT

This project includes, but is not limited to new construction including:

clearing;
grubbing;
right-of-way debris disposal;
excavation and/or embankment to subgrade;
landing construction;
acquisition and installation of drainage structures;
manufacture, and application of rock;
grass seeding.

This project includes but is not limited to reconstruction including:

Road	Station (s)	Requirements
C2028	9+90 to 15+85	Vertical and horizontal re-alignment of road, installation of one 18” cross drain and one 24” culvert, widening of road to 14’ running surface, plus curve widening and apply 8” lift of 1½” minus rock. Approx. 334 cy.
	11+87 to 15+85	Apply 10” lift of 3” Jaw Run rock. Approx. 416 cy.

This project also includes but is not limited to pre-haul maintenance including:

Road	Station (s)	Requirements
DC-LINE	0+00	Where gravel road begins at junction with HWY 12.
	0+00 to 225+00	Grade and reshape running surface.
	28+40	Clean culvert inlet.
	29+90 to 30+75	Re-shape ditch.
	32+55 to 33+75	Re-shape ditch and ditch-out right.
	35+40	Junction “SPUR.”
	42+85	Re-shape ditch-out right.
	51+87	Spot patch road with 10 cy. of 1 ½” minus rock.
	64+65 to 65+05	Clean culvert inlet and clear trees from ditch line.
	70+75 to 70+90	Clear logs from ditch.
	73+70	Spot patch road with 10 cy. of 1 ½” minus rock.
	79+40	Spot patch road with 10 cy. of 1 ½” minus rock.
	84+75 to 97+00	Apply 4” lift of 1 ½” minus rock. Approx. 233 cy.
	116+75 to 120+06	Apply 4” lift of 1 ½” minus rock. Approx. 63 cy.
	129+05 to 129+55	Clean culvert inlet – remove trees from ditch.
	135+00	Clear trees from ditch.
	147+45	Junction DC3000. Re-shape ditch.
	169+00 to 169+85	Re-shape ditch left.
	193+45 to 197+25	Re-shape ditch left.

	212+75	Re-shape ditch out left/right.
	218+60	Junction “SPUR” to right.
	218+60 to 221+75	Clean and re-shape ditch right.
	218+60 to 225+00	Apply 4” lift of 1 ½” minus. Approx. 122 cy.
	222+00	Install 18” x 30’ cross drain.
	225+00	End grading. End of existing road. Equals 0+00 DC-LINE Ext.
C2028	0+00	Junction with C2026.
	0+00 to 9+90	Apply 6” lift of 1 ½” minus. Approx. 297 cy. Grade and reshape running surface and compact.
C2026	0+00	Junction with C2020.
	0+00 to 20+41	Grade and re-shape running surface.
C2020	0+00	Junction with C-LINE.
	0+00 to 69+45	Apply 4” lift of 1 ½” minus. Approx. 1320 cy. Grade and reshape running surface and compact.
	39+90	Junction with C2024.
	51+25	Install 18” x 30’ cross drain.
	51+25 to 54+63	Re-shape ditch.
	58+83	Clear culvert inlet.

This project also includes but is not limited to abandonment including:

light abandonment.

This project also includes but is not limited to rock pit development including:

grubbing;
removal of overburden;
disposal of overburden and waste in appropriate areas;
blasting, crushing and stockpiling of rock.

SECTION 1 - GENERAL CLAUSES

1.1-1

Clauses in this plan apply to all construction or reconstruction or pre-haul maintenance or abandonment including landings unless otherwise noted.

1.1-2

Construction or reconstruction or pre-haul maintenance of the following roads is required. All roads shall be constructed or reconstructed or pre-haul maintained on the State's location and in accordance with this Road Plan.

Road	Stations	Type
DC-Line	0+00 to 225+00	Pre-Haul Maintenance
DC-Line Ext.	0+00 to 13+69	Construction
C2020	0+00 to 69+45	Pre-Haul Maintenance
C2026	0+00 to 20+41	Pre-Haul Maintenance
C2028	0+00 to 9+90	Pre-Haul Maintenance
C2028	9+90 to 15+85	Reconstruction
C3115	0+00 to 2+40	Construction

1.1-3

Construction of the following roads is not required. Roads used by the Purchaser shall be constructed on the State's location and in accordance with this Road Plan.

Road	Stations	Type
DC5000	0+00 to 11+00	Construction
DC5010	0+00 to 10+12	Construction
C2024	0+00 to 8+47	Construction
C2026A	0+00 to 13+88	Construction
C3116	0+00 to 4+19	Construction

1.1-4

If the Purchaser desires a road location or design change, a revised Road Plan shall be submitted to the State for consideration.

1.1-5

On this plan quantities are minimum acceptable values. Additional quantities required by the State because of hidden conditions or Purchaser's choice of construction season or techniques shall be at the Purchaser's expense. Hidden conditions include, but are not limited to: solid subsurface rock, subsurface springs, saturated ground, and unstable soil.

1.1-7

Hauling of forest products or equipment may require a county road hauling permit. Purchaser is responsible for obtaining a permit, and any costs associated with extra maintenance or repair levied by a county.

1.1-10

Abandonment of the following roads is required. All roads shall be abandoned in accordance with this Road Plan.

Road	Stations	Type
DC0095	0+00 to 8+87	Light
C2028	15+85 to 18+10	Light

1.2-1

The construction or reconstruction or pre-haul maintenance of any roads specified herein shall not be permitted between September 30 and May 1 unless authority to do so is granted, in writing, by the Contract Administrator.

1.2-2

Purchaser shall not use roads constructed or reconstructed or pre-haul maintained under this Road Plan for hauling, other than timber cut on the right-of-way, without written approval from the Contract Administrator.

1.2-3

The following road shall be constructed using track mounted hydraulic excavator, unless otherwise authorized, in writing, by the Contract Administrator.

Road	Stations
DC-Line Ext.	0+00 to 4+00

1.2-6

Pioneering shall not extend past construction that will be completed during the current construction season. Drainage shall be provided on all uncompleted construction as approved, in writing, by the Contract Administrator.

Clearing and grubbing shall be completed prior to starting excavation and embankment.

Culvert placement in live streams shall precede embankment where culverts are to be placed along natural ground.

Culverts shall be installed in completed subgrade as construction progresses.

Subgrade, ditches, and culvert installations shall be completed and are subject to written approval by the Contract Administrator prior to rock application, subgrade compaction, and/or timber haul.

1.3-2

All optional roads are intended for dry weather use. Hauling shall be suspended when wheel track rutting exceeds 6 inches unless Purchaser elects to correct the situation at his/her own expense. Corrective measures and continued operations are subject to written approval by the Contract Administrator.

1.4-2

The following Roads shall be constructed or reconstructed in accordance with construction stakes, and the detailed designs included in this road plan.

Road	Stations
DC-Line Ext.	0+00 to 13+69
C2028	9+90 to 15+85

1.4-3

Reference points (R.P.'s) that are moved or damaged at any time during construction shall be reset in their original locations by the Purchaser. Excavation and embankment shall not proceed on road segments controlled by said R.P.'s until all moved or damaged R.P.'s are reset.

1.5-1

Maintenance on roads listed in Contract Clauses C-50 (Purchaser Road Maintenance and Repair) and C-60 (Designated Road Maintainer) shall be performed in accordance with Forest Access Road Maintenance Specifications.

1.5-2

Roads shall be maintained in a condition that will allow the passage of light administrative vehicles.

1.5-3

Snowplowing will be permitted only after execution of a “Snow Plowing Agreement”, which is available from the Contract Administrator upon request.

SECTION 2 - CLEARING

2.1-1

Fell all vegetative material larger than 2 inches DBH or over 5 feet high between the marked right-of-way boundaries or if not marked in the field, between clearing limits specified on TYPICAL SECTION SHEET.

2.1-2

Deck all merchantable right-of-way timber. The decks shall be parallel to the road centerline and within the cleared right-of-way. The decks shall be free of dirt, limbs and other right-of-way debris, and removable by standard log loading equipment from the road bed.

2.1-3

Right-of-way timber shall not be decked within the grubbing limits or in locations that interfere with the construction of the road prism or impede drainage.

SECTION 3 - GRUBBING

3-1

All stumps shall be removed that fall between grubbing limits shown on the TYPICAL SECTION SHEET. Those outside the grubbing limits but with undercut roots shall also be removed. Stumps over 22 inches diameter shall be split. Stumps over 40 inches shall be quartered.

3-2

Grubbing limits are defined as the entire area between the external limits shown on the TYPICAL SECTION SHEET.

3-3

Within waste and debris areas, removal of stumps shall not be required, provided that they are cut flush with the ground.

3-5

Organic material shall be excluded from the road subgrade width as shown in TYPICAL SECTION SHEET.

SECTION 4 - DEBRIS DISPOSAL AND REMOVAL

4.1-1

Right-of-way debris is defined as all nonmerchantable vegetative material larger than one cubic foot in volume within the grubbing limits.

4.1-2

All right-of-way debris disposal shall be completed prior to the application of rock and/or timber haul.

4.2.3-1

Right-of-way debris shall be scattered outside the grubbing limits on the right or left side of the road.

4.2.3-2

Right-of-way debris shall not be placed against standing timber.

SECTION 5 - EXCAVATION

5.1-1

Unless controlled by construction stakes or specific design sheets herein, Roads shall be constructed or reconstructed in accordance with dimensions shown on the TYPICAL SECTION SHEET.

5.1-2

Purchaser shall not bury merchantable material.

5.1-3

Road grade and alignment shall conform to the State's marked location. The reconstruction of existing road grades shall conform to the original location except where controlled by slope stakes. Grade and alignment shall have smooth continuity, without abrupt changes in direction.

Construction limitations are as follows:

Favorable Grade	Adverse Road Grade	Minimum Curve Radius
18%	12%	60 feet

Changes in road grade shall not exceed 6% within 100 feet. Adverse grades on curves shall not exceed 10% of the curve radius. Favorable grades through switchbacks shall not exceed 12%. Transition grades entering and leaving switchbacks shall not exceed a 5% grade change.

A switchback is defined as a curved segment of road between a beginning and end of the same curve, where the change of traffic travel direction is greater than 90 degrees.

Transition grades required to meet switchback grade limitations shall be constructed on the tangents preceding and departing from the switchbacks.

5.1-4

Minimum extra widening on the inside of curves shall be:

5 feet extra	80 to 100 foot radius curve
7 feet extra	60 to 80 foot radius curve

5.1-5

Curve widening, where required, shall be added to the inside of curves.

5.1-7

Roads shall be constructed or reconstructed to the dimensions shown on the TYPICAL SECTION SHEET, within the tolerance listed below. Tolerance classes for each road are listed on the TYPICAL SECTION SHEET.

Tolerance Class	A	B	C
Road Width (feet)	+1.5	+1.5	+2.0
Subgrade elevation (feet +/-)	0.5	1.0	2.0
Centerline alignment (feet lt./rt.)	1.0	1.5	3.0

5.1-8

Excavation slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Excavation Slope Ratio
Common Earth (on side slopes of 55%)	1:1
Common Earth (55% to 70% sideslopes)	¾:1
Common Earth (on slopes over 70%)	½:1
Fractured or loose rock	½:1
Hardpan or solid rock	¼:1

5.1-9

Excavation and embankment slopes shall be constructed to a uniform line and left rough for easier revegetation.

5.1-10

Embankments shall be widened as follows:

Height at Centerline	Subgrade Widening
Less than 6 feet	2 feet
6 feet or over	4 feet

5.1-11

Embankment slopes shall be constructed no steeper than shown on the following table except as construction staked or designed:

Material Type	Embankment Slope Ratio
Common Earth and Rounded Gravel	1½:1
Angular Rock	1¼:1
Sandy Soils	2:1

5.1-12

Organic material shall be excluded from Road subgrade and embankment as shown on the TYPICAL SECTION SHEET.

5.1-14

Where side slopes exceed 45 percent, full bench construction shall be utilized for the entire subgrade width except as construction staked or designed.

5.1-15

On the following road, the existing subgrade shall be widened to the dimensions shown on the TYPICAL SECTION SHEET.

Road	Stations
C2028	9+90 to 15+85

5.1-16

Turnout locations noted on this plan are approximate. Locations shall be adjusted to fit with final subgrade alignment and sight distances. Location shall be subject to written approval of the Contract Administrator.

5.1-17

Turnouts shall be intervisible with a maximum of 1,000 feet between turnouts unless shown otherwise on drawings. Location shall be subject to written approval of the Contract Administrator.

5.1-18

Turnarounds shall be no larger than 30 feet long and 30 feet wide. Location shall be subject to written approval of the Contract Administrator.

5.1-20

Purchaser shall construct ditches and reconstruct excavation slopes to provide sufficient width for ditches and road surface on all reconstructed roads. Excavated slopes shall be consistent with Clause 5.1-8. Excavated material shall be scattered outside the grubbing limits or end hauled or pushed to designated waste areas. Pulling ditch material across the road or mixing in with the existing road surface will not be allowed.

5.1-21

Purchaser shall construct ditches. Ditch material shall be used to build up the subgrade as shown on the TYPICAL SECTION SHEET.

5.1-22

On the following road, the outside shoulder will be excavated to daylight where directed by the Contract Administrator.

Road	Stations
DC-Line Ext.	0+00 to 13+69

5.1.1-1

Waste material shall not be deposited within 50 feet of a cross drain culvert installation.

5.1.1-2

Waste material shall not be deposited within 100 feet of a live stream or within a riparian management zone.

5.1.1-3

Waste material may be deposited adjacent to the road prism on side slopes up to 45 percent if the waste material is compacted and more than 100 feet away from live streams. On side slopes of 45 percent or more, all excavation shall be end hauled or pushed to designated embankment sites.

5.1.1-5

When constructing landings, waste material and embankment shall not be placed on side slopes steeper than 45%.

5.1.1-6

On the following roads, full bench construction shall be utilized with all excess excavated material end hauled or pushed to designated waste areas.

End Haul/Waste Material Disposal

Road	Stations	Waste Area Location	Remarks
DC-Line Ext.	0+00 to 4+00	5+85	Layer and compact in large flat area on the West of side of the road. Excavated soils may also be placed on the East side of the designed DC-Line Ext. at the junction with the DC5000 as road fill to aid in construction of the optional DC5000 spur.

5.1.1-8

The amount of material to be contained in a waste area shall be at the discretion of the Contract Administrator.

5.1.2-1

Select borrow shall contain no more than 5% dirt clay, vegetative debris, or other waste material by volume.

5.2-1

Road pioneering operations shall not undercut the final cut slope, deposit excavated material outside the clearing limits, or restrict drainage.

5.3-1

All embankment and waste material shall be compacted. The minimum acceptable compaction is achieved by placing embankments in 2 foot or shallower lifts and routing excavation equipment over entire width of the lifts.

5.3-2

On the following roads, All embankment subgrades and select borrow deeper than 5 feet at the road shoulder shall be compacted full width in 1 foot lifts by four coverages with a vibratory drum roller weighing at least 14,000 pounds at a maximum operating speed of 3 mph. Compaction shall consist of soils being compacted to ninety five percent (95%) of the maximum density for the material. All compaction tests are the responsibility of the purchaser.

Road	Stations
DC-Line Ext.	0+00 to 13+69
C2028	9+90 to 15+85

5.4-1

Silt-bearing runoff shall not be permitted to enter streams.

5.4-3.1

On the following roads, Purchaser shall furnish and evenly spread the seed mixture listed below on all exposed soil inside the grubbing limits at a rate of 40 pounds per acre. The date of application is subject to approval by the Contract Administrator.

Mixture Percent by Weight	Minimum Percent Germination
50% Fescue, Red	90% Germination
25% Ryegrass, Perennial	90% Germination
15% Bentgrass	85% Germination
10% Clover, White and White Dutch (inoculated)	90% Germination

Weed seed shall not exceed 0.5% by weight.

Seed shall be furnished in standard containers on which the following shall be shown:

1. Common name of seed
2. Net weight
3. Percent of purity
4. Percentage of germination
5. Percentage of weed seed and inert material

Required seed not spread by the termination of this contract shall become property of the State. The amount owed to the State shall be as follows, less the amount spread.

Road	Stations	Seed Quantity (lbs)
DC-Line Ext.	0+00 to 13+69	50
DC0095	0+00 to 8+87	30
DC5000	0+00 to 11+00	40
DC5010	0+00 to 10+12	35
C2024	0+00 to 8+47	30
C2026A	0+00 to 13+88	45
C2028	9+90 to 15+85	20
C2028	15+85 to 18+10	10
C3115	0+00 to 2+40	10
C3116	0+00 to 4+19	15

5.5-4

Constructed or reconstructed subgrades shall be compacted full width except ditch prior to rock application. Compaction shall be by a smooth-drum vibratory roller weighing at least 14,000 pounds. Four complete passes shall be made at a maximum operating speed of 3 mph.

5.5-5

Finished subgrade shall be crowned as shown on the TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

SECTION 6 - DRAINAGE

6.2.1-1

Purchaser shall furnish, install, and maintain corrugated polyethylene pipe (AASHTO specification No. M-294 Type S) as designated on the CULVERT LIST. Culvert and flume lengths shall be varied to fit as-built conditions subject to written approval by the Contract Administrator.

6.2.1-2

On culverts 24 inches and smaller, bands shall have a minimum width of 12 inches, on culverts over 24 inches, bands shall have a minimum width of 24 inches. Manufacturer's approved hinged split coupler bands shall be used on corrugated polyethylene pipe, bands shall have a minimum of 4 corrugations, 2 on each side of the pipe joint.

6.2.1-5

On required roads: culverts, downspouts, flumes, bands, and gaskets as listed on the CULVERT LIST which are not installed shall become property of the State. Purchaser shall stockpile materials as directed by the contract administrator.

6.2.1-6

Metal, concrete, or plastic culverts and bands removed from the road bed shall be removed from State land prior to termination of this contract.

6.2.2.3-1

Cross drains and surface culverts on road grades in excess of 3% shall be skewed at least 30 degrees from perpendicular to the road centerline, except that cross drain culverts at the low points of dips in roads shall not be skewed.

6.2.2.3-2

Cross drain culverts shall be installed at a slope steeper than the incoming ditch grade, but not less than 3% nor more than 10%.

6.2.2.5-1

Drainage structure outfalls shall not terminate directly on unprotected soil that will erode. Downspouts, flumes, and energy dissipators shall be installed to prevent erosion.

6.3-1

Ditches shall be constructed concurrently with construction of the subgrade. Ditches shall drain to culverts, ditchouts, and natural drainages.

6.4-1

Catch basins shall be constructed to resist erosion in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL. Minimum dimensions: two feet wide and four feet long with backslopes consistent with Clause 5.1-8: Excavation Slopes.

6.5-1

Headwalls shall be constructed in accordance with CULVERT AND DRAINAGE SPECIFICATION DETAIL at all cross drain culverts except for temporary culverts.

6.5-2

Embankment slopes adjacent to culvert inlets and outlets at live stream crossings shall be armored with machine placed light loose riprap for a distance of one culvert diameter on each side of the pipe and one culvert diameter above the pipe in accordance with the CULVERT LIST.

6.6-1

On the following roads, water bars shall be constructed in accordance with the WATER BAR DETAIL, at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths.

Road	Stations
C2028	15+85 to 18+10
DC0095	0+00 to 8+87

SECTION 7 – ROCK

7.1-1

Rock for construction and/or reconstruction under this contract may be obtained from sources on State land as listed below at no charge to the Purchaser. Rock in existing stockpiles shall not be utilized. Development and use shall be in accordance with the attached written "Development Plan" prepared by the State. Upon completion of operations, the rock source shall be left in the condition specified in said plan, subject to approval by the Contract Administrator. Use of material from any other source must have prior written approval from the Contract Administrator. If other operators are using or desire to use these rock sources, joint operating plans shall be developed. All parties shall follow these plans. The Purchaser shall give the Contract Administrator 5 days notice prior to commencing any operations in the listed rock pits.

Source	Location
Low Bank Rockpit	NW ¼ SW ¼, Section 15, Township 17 North, Range 04 West, W.M.

Rock from other sources must be approved, in writing, by the Contract Administrator.

7.1-3

All rock source operations shall be conducted as directed by the Contract Administrator and in accordance with the attached development plan.

7.1-6

Rock for construction or reconstruction under this contract may be obtained from any commercial source as approved in writing by the Contract Administrator.

7.2.1-4

3 INCH MINUS CRUSHED, 3 INCH JAW RUN, 8 INCH PLUS and 1 ½ INCH MINUS CRUSHED rock shall meet the following specifications for gradation and quality when placed in hauling vehicles or during manufacture and placement into a stockpile. The exact point of evaluation for conformance to specifications will be determined by the Contract Administrator.

7.2.1.1-3

1½ INCH MINUS CRUSHED ROCK

% passing 1½" square sieve	100%
% passing 1" square sieve	70 - 90%
% passing ⅝" square sieve	50 - 80%
% passing ¼" square sieve	30 - 50%
% passing U.S. #40 sieve	3 - 18%
% passing U.S. #200 sieve	7.5% Max.

All percentages are by weight.

7.2.1.1-6

3 INCH MINUS CRUSHED ROCK

% passing 3" square sieve	100%
% passing 2" square sieve	65 - 95%
% passing ¾" square sieve	28 - 70%
% passing #4 square sieve	10 - 35%
% passing U.S. #200 sieve	0 - 10%

All percentages are by weight.

7.2.1.1-10

8 INCH PLUS ROCK

% equal to, or larger in one dimension than the specified size	100%
% passing U.S. #40 sieve	16% Max.
% passing U.S. #200 sieve	5% Max.

All percentages are by weight.

7.2.1.1-16

3" JAW RUN ROCK

% Equal to, or smaller in two dimensions than the specified size……100%
% passing U.S. #40 sieve……16% Max.
% passing U.S. #200 sieve……5% Max.

All Percentages are by weight.

7.2.2-1

The Purchaser shall provide a weatherproof field laboratory equipped with gradation testing equipment. This laboratory shall be available for use by the Contract Administrator during the entire crushing operation.

7.2.3-1

Measurement of the rock shall be on a cubic yard truck measure basis. Each truck box shall be measured by the Contract Administrator prior to rock hauling. The Contract Administrator shall periodically require that a load be flattened off and its volume calculated. An average of such volumes for each truck shall be used to tally the volume to be hauled. The Purchaser shall provide and maintain load tally sheets for each truck and shall give them to the Contract Administrator upon request.

7.2.4-1

Rock drilling and shooting shall meet the following specifications:

a. Oversize material remaining in the rock source at the conclusion of the timber sale shall not exceed 5 percent of the total volume mined for the sale.

b. Oversize material is defined as rock fragments larger than two feet in any dimension.

c. The Purchaser shall submit an informational drilling and shooting plan to the Contract Administrator 5 working days prior to any drilling. (Form #M-126PAC).

7.3-1

Rock stockpiles shall meet the following specifications:

Before placing aggregates upon the stockpile site, the site shall be cleared of vegetation, trees, stumps, brush, rocks, or other debris and the ground leveled to a smooth, firm, uniform surface.

The piles, when completed, shall be neat and regular in shape. The stockpile height shall be limited to a maximum of 24 feet. Stockpiles in excess of 200 cubic yards shall be built up in layers not more than 4 feet in depth. Stockpile layers shall be constructed by trucks, "clamshells" or other methods approved, in writing, by the Contract Administrator. Pushing aggregates into piles with a bulldozer shall not be permitted. Each layer shall be completed over the entire area of the pile before depositing aggregates in the next layer. The aggregate shall not be dumped so that any part of it runs down and over the lower layers in the stockpile. The method of dropping from a bucket or spout in one location so as to form a cone shaped pile will not be permitted.

No equipment other than pneumatic tired equipment shall be used on stockpiles. Stockpiles of different types or sizes of aggregate shall be spaced far enough apart, or separated by suitable walls or partitions, to prevent the mixing of the aggregates.

When removing materials from the face of the stockpile, the equipment shall be operated in such a manner as to face-load from the floor to the top of the stockpile.

7.3-2

Crushed material shall be stockpiled in the Low Bank Pit as directed by the Contract Administrator in accordance with the attached rockpit development plan dated May 8, 2006.

7.3-4

The Purchaser shall stockpile an additional 2,000 cubic yards of 3 INCH MINUS CRUSHED rock and 2000 cubic yards of 1½ INCH MINUS CRUSHED rock. This additional rock shall be stockpiled at the Low Bank rock pit by the end of crushing operations.

7.4.2-1

Apply at least the minimum required rock quantity as shown on the ROCK LIST. Required and optional rock shall meet the specifications on the ROCK LIST.

7.4.2-5
Subgrade shall be approved, in writing, by the Contract Administrator prior to application of rock.

7.4.2-6
A grader shall be used to shape the subgrade and existing surface prior to the application of rock.

7.4.2-9
Turnarounds, turnouts, and curve widening shall have rock applied to the same depth and specifications as the traveled way.

7.4.2-10
Each lift of rock shall be crowned as shown on TYPICAL SECTION SHEET, and shall be uniform, firm, rut-free, and shaped to ensure surface runoff in an even, unconcentrated manner.

7.4.2-11
Purchaser shall spot patch and or apply rock as directed by the Contract Administrator in accordance with quantities shown on ROCK LIST.

7.4.3-2
On the following roads rock shall be spread and compacted full width in one lift each not to exceed 10 inches uncompacted depth. Compaction shall be by steel-wheeled smooth drum vibratory roller weighing at least 14,000 pounds. Four complete passes at a maximum speed of 3 mph shall be made on each lift.

Road	Stations
DC-Line Ext.	0+00 to 13+69
C2028	0+00 to 15+85
C2020	0+00 to 69+45

7.4.3-3
On the following roads, rock shall be spread and compacted using loaded haul trucks concurrently with rock hauling operations.

Road	Stations
DC5000	0+00 to 11+00
DC5010	0+00 to 10+12
C2024	0+00 to 8+47
C2026A	0+00 to 13+88
C3115	0+00 to 2+40
C3116	0+00 to 4+19

SECTION 10 - ROAD AND LANDING ABANDONMENT

10.1-1
The following roads shall be abandoned by the Purchaser prior to the termination of this Contract and according to the ROAD ABANDONMENT CROSS SECTIONS DETAIL

Road	Stations	Type
C2028	15+85 to 18+10	Light

10.1-2
Light Abandonment shall consist of:
constructing non-drivable water bars in conformance with the attached NON-DRIVABLE WATER BAR DETAIL at a maximum spacing which will produce a vertical drop of no more than 10 feet between water bars or between natural drainage paths and with a maximum spacing of 100 feet;
skewing water bars at least 30 degrees from perpendicular to the road centerline on roads in excess of 3% grade;
keying water bars into ditchline;
construction of tank trap barriers in conformance with the attached "T" TANK TRAP DETAIL;
removing culverts from State Land;
removing ditch cross drain culverts and leaving the resulting trench open;
sloping all trench walls and approach embankments no steeper than 1.5:1;
grass seeding concurrently with abandonment and in accordance with Clause: 5.4-3.1;

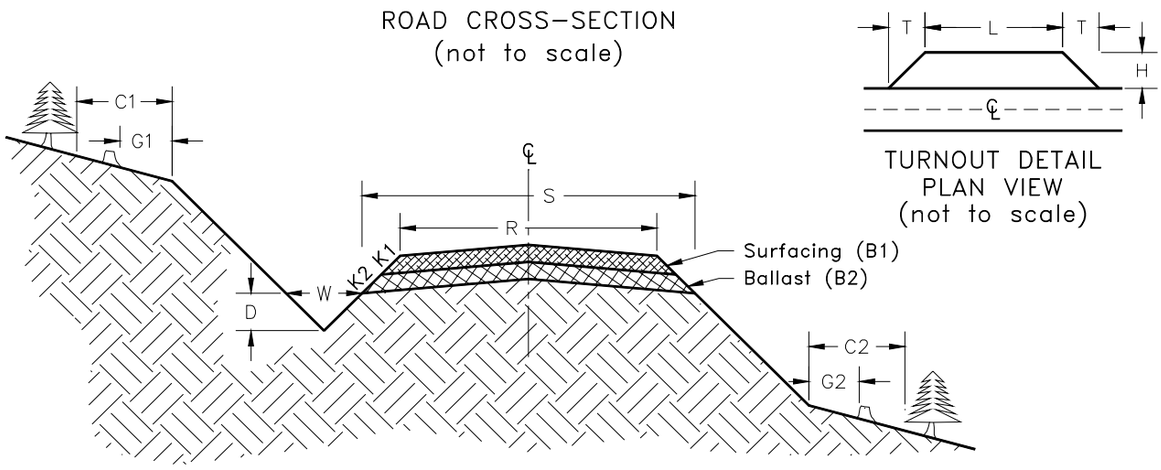
covering, concurrently with abandonment, all exposed soils within 100 feet of any live stream, with a 8 inch deep layer of straw.
scatter woody debris onto abandoned road surfaces.

10.1-3A

On the following roads, Purchaser shall construct tank traps in accordance with the attached "T" TANK TRAP DETAIL.

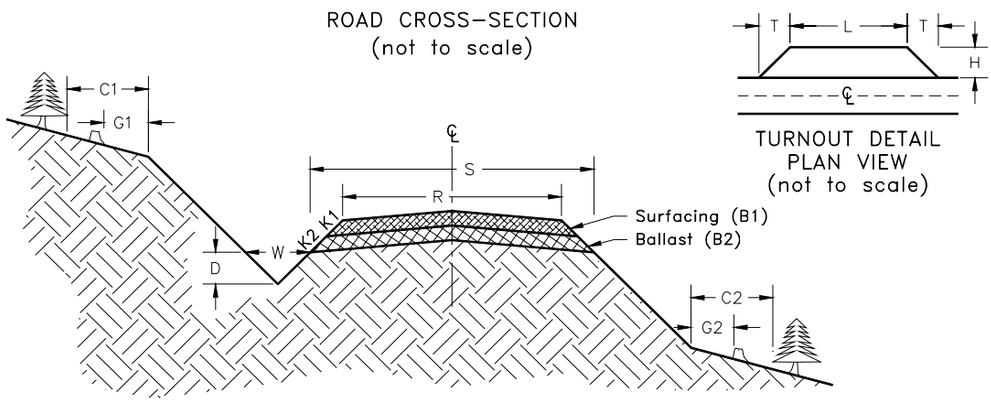
Road	Station
C2028	16+00

TYPICAL SECTION SHEET



Road Number	From Station	To Station	Tolerance Class	Subgrade Width (ft)	Road Width (ft)	Ditch		Crown in. @ CL	Grubbing Limits (ft)		Clearing Limits (ft)	
						Width (ft)	Depth (ft)					
				S	R	W	D		G1	G2	C1	C2
DC-Line Ext.	0+00	13+69	A	18	14	3	1	4	5	5	10	10
C2028	9+90	15+85	A	18	14	3	1	4	5	5	10	10
DC5000	0+00	11+00	C	16	12	3	1	4	5	5	10	10
DC5010	0+00	10+12	C	16	12	3	1	4	5	5	10	10
C2024	0+00	8+47	C	16	12	3	1	4	5	5	10	10
C2026A	0+00	13+88	C	16	12	3	1	4	5	5	10	10
C3115	0+00	2+40	C	16	12	3	1	4	5	5	10	10
C3116	0+00	4+19	C	16	12	3	1	4	5	5	10	10
DC-Line	0+00	225+00	-	-	-	3	1	4	-	-	10	10
C2028	0+00	9+90	A	16	12	3	1	4	-	-	10	10
C2026	0+00	20+41	A	16	12	3	1	4	-	-	10	10
C2020	0+00	69+45	A	16	12	3	1	4	-	-	10	10

ROCK LIST



BALLAST

Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Subtotal	Rock Source	Turnout		
									Length	Width	Taper
			K2	B2					L	H	T
DC-LINE EXT.	0+00	13+69	1.5	10”	67	13.69	917	LOW BANK			
	TURNOUT (1)		1.5	10”	67	1	67		50	14	50
	CURVE WIDENING		1.5	10”	52	1.26	66				
C2028	11+87	15+85	1.5	10”	67	3.98	267				
	TURNOUT (1)		1.5	10”	67	1	67		50	14	50
	CURVE WIDENING		1.5	10”	30	2.72	82				
DC5000*	0+00	11+00	1.5	15”	81	11.00	891				
	LANDING (1)		-	-	81	1	81				
DC5010*	0+00	10+12	1.5	15”	81	10.12	820				
	LANDING (1)		-	-	81	1	81				
C2024*	0+00	8+47	1.5	15”	81	8.47	686				
	LANDING (1)		-	-	81	1	81				
C2026A*	0+00	13+88	1.5	15”	81	13.88	1124				
	LANDING (1)		-	-	81	1	81				
	TURNOUT (1)		1.5	15”	81	1	81		50	14	50
C3115	0+00	2+40	1.5	15”	81	2.4	194				
C3116*	0+00	4+19	1.5	15”	81	4.19	339				
	LANDING (1)		-	-	81	1	81				
3 INCH MINUS CRUSHED ROCK TO STOCKPILE							2000				
CULVERT HEADWALLS AND ENERGY DISSIPATORS – 8 INCH PLUS ROCK						-	20				

3 INCH JAW RUN BALLAST TOTAL 6006 Cubic Yards
3 INCH MINUS CRUSHED STOCKPILE TOTAL 2,000 Cubic Yards
8 INCH PLUS ROCK TOTAL 20 Cubic Yards

SURFACE

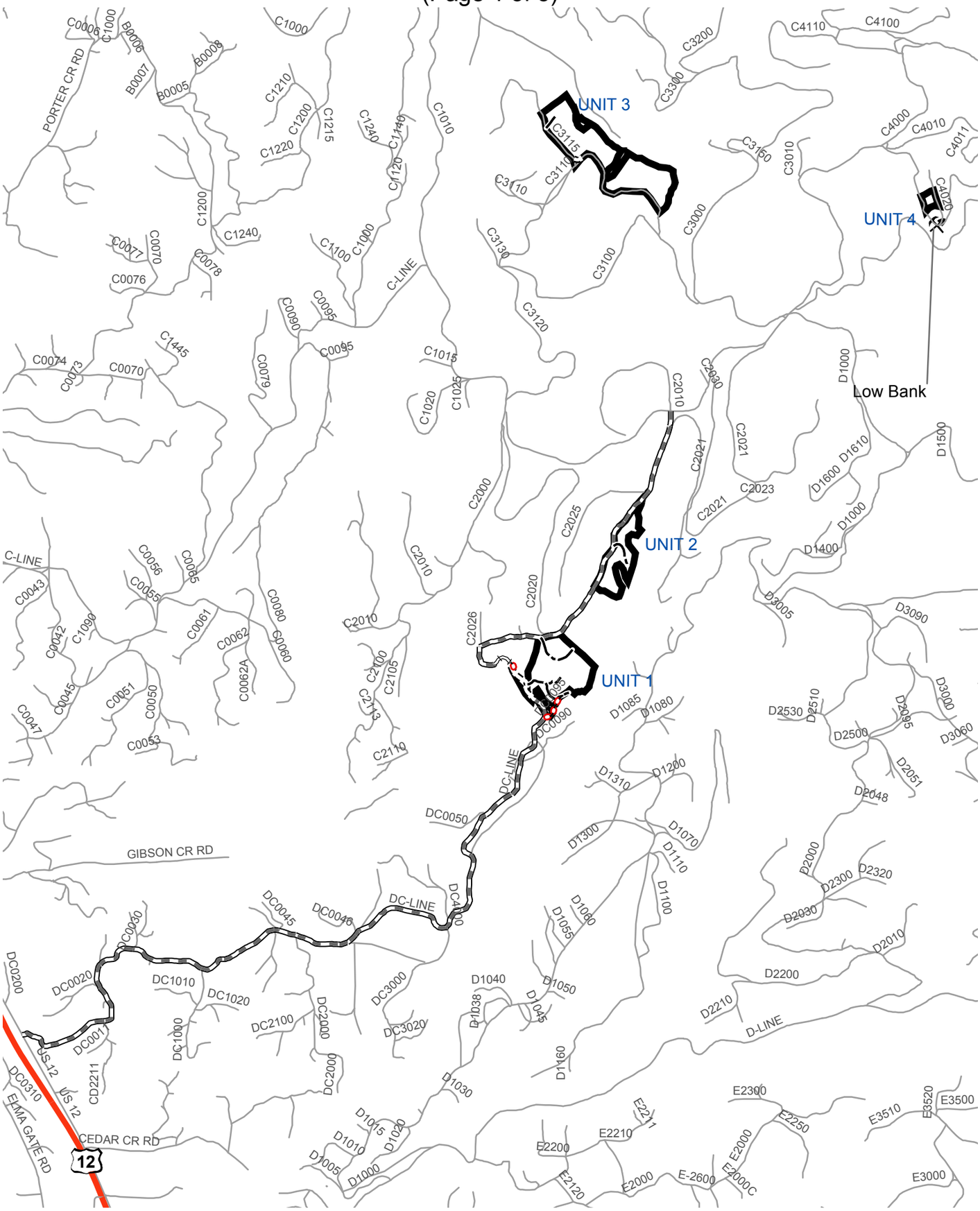
Road Number	From Station	To Station	Rock Slope	Compacted Rock Depth	C.Y./ Station	# of Stations	C.Y. Total	Rock Source
			K1	B1				
DC-LINE EXT.	0+00	13+69	1.5	8	47	13.69	643	LOW BANK
	CURVE WIDENING		1.5	8	34	1.26	43	
C2028	9+90	15+98	1.5	8	47	5.95	280	
	CURVE WIDENING		1.5	8	20	2.72	54	
DC-LINE	51+87		-	-	-	-	10	
DC-LINE	73+70		-	-	-	-	10	
DC-LINE	79+40		-	-	-	-	10	
DC-LINE	84+75	97+00	1.5	4	19	12.25	233	
DC-LINE	116+75	120+06	1.5	4	19	3.31	63	
DC-LINE	218+60	225+00	1.5	4	19	6.4	122	
C2028	0+00	9+90	1.5	6	30	9.9	297	
C2020	0+00	69+45	1.5	4	19	69.45	1320	
1 ½” MINUS CRUSHED ROCK TO STOCKPILE							2000	

1 ½ INCH MINUS CRUSHED STOCKPILE TOTAL 2,000 Cubic Yards
1 ½ INCH MINUS CRUSHED SURFACE TOTAL 3,085 Cubic Yards

*Optional Rock

If Purchaser elects to haul on optional rock roads in dry weather, the depth listed above is recommended but not required.

OUTCAST
ROAD PLAN MAP
(Page 1 of 5)



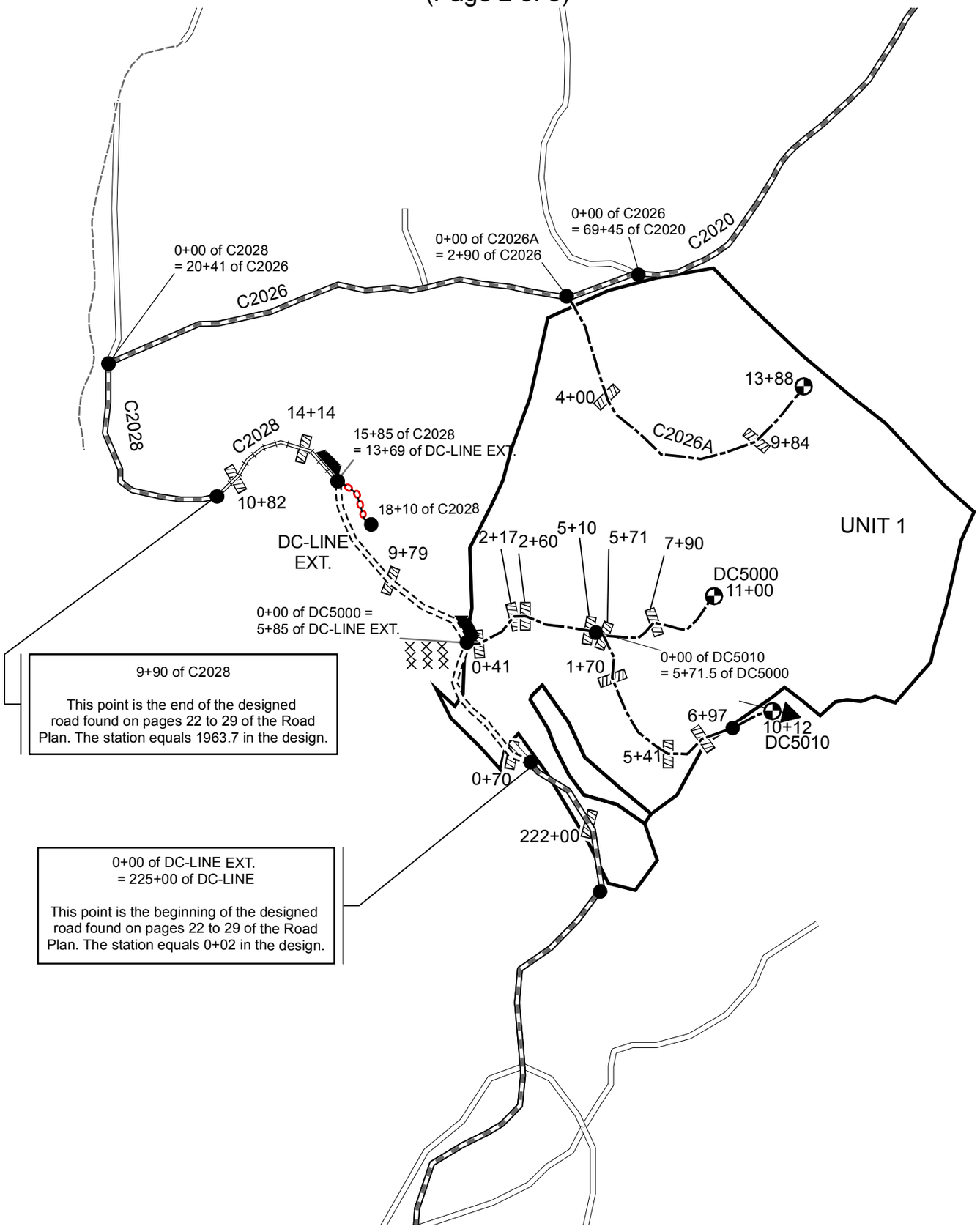
Legend

- OPTIONAL CONSTRUCTION
- PRE-HAUL MAINTENANCE
- REQUIRED ABANDONMENT
- REQUIRED CONSTRUCTION
- REQUIRED RECONSTRUCTION
- FOREST ROADS
- HWY 12
- UNIT BOUNDARY
- ROCKPITS

N

0 1,250 2,500 5,000 7,500 10,000
Feet

OUTCAST
ROAD PLAN MAP
(Page 2 of 5)



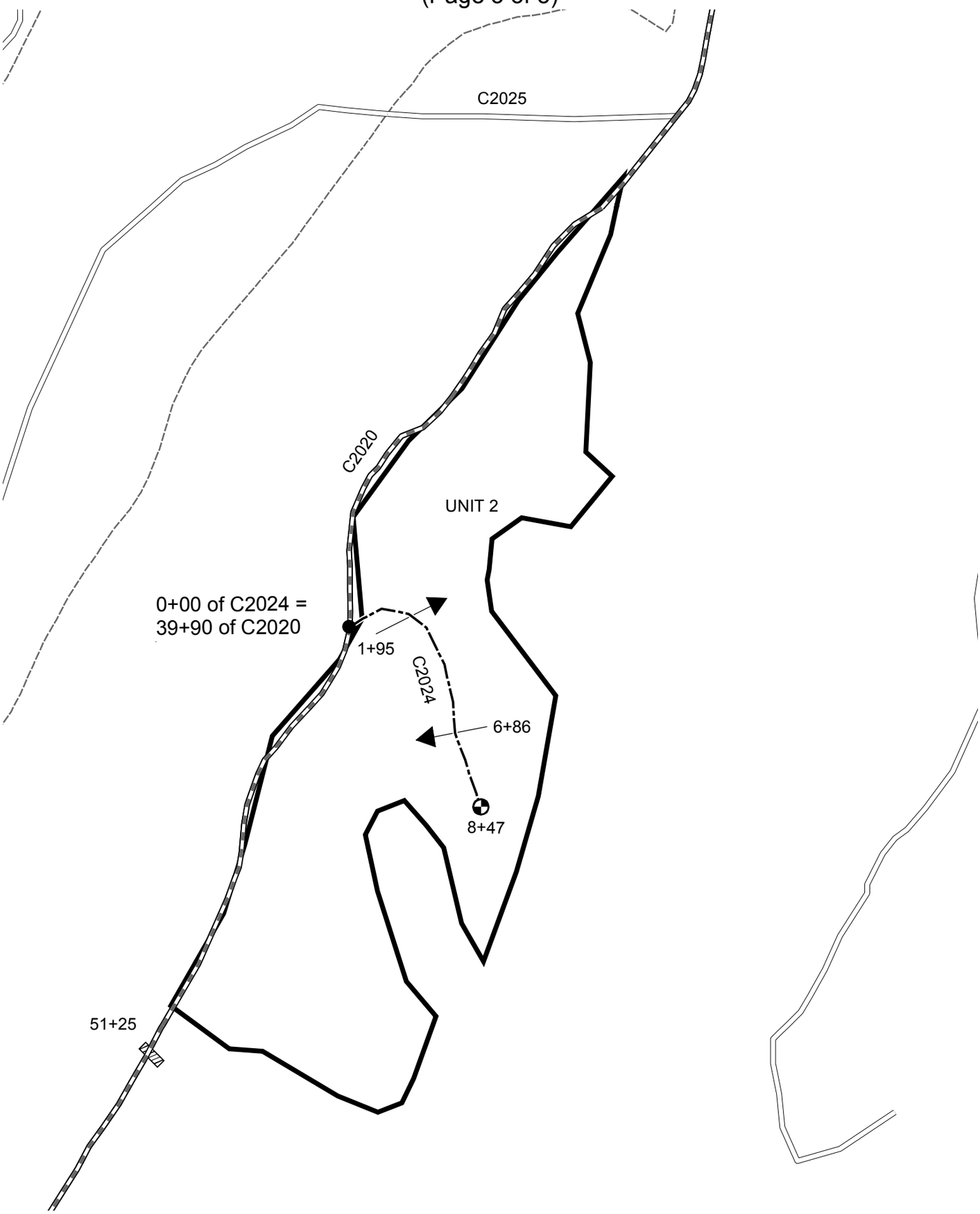
Legend

- OPTIONAL CONSTRUCTION
- PRE-HAUL MAINTENANCE
- REQUIRED ABANDONMENT
- REQUIRED CONSTRUCTION
- REQUIRED RECONSTRUCTION
- EXISTING FOREST ROADS
- TRAILS
- DITCH OUT
- CULVERTS
- TURNOUTS
- LANDING
- UNIT BOUNDARY
- × × × × WASTE AREA

N

0 165 330 660 990 1,320
Feet

OUTCAST
ROAD PLAN MAP
(Page 3 of 5)



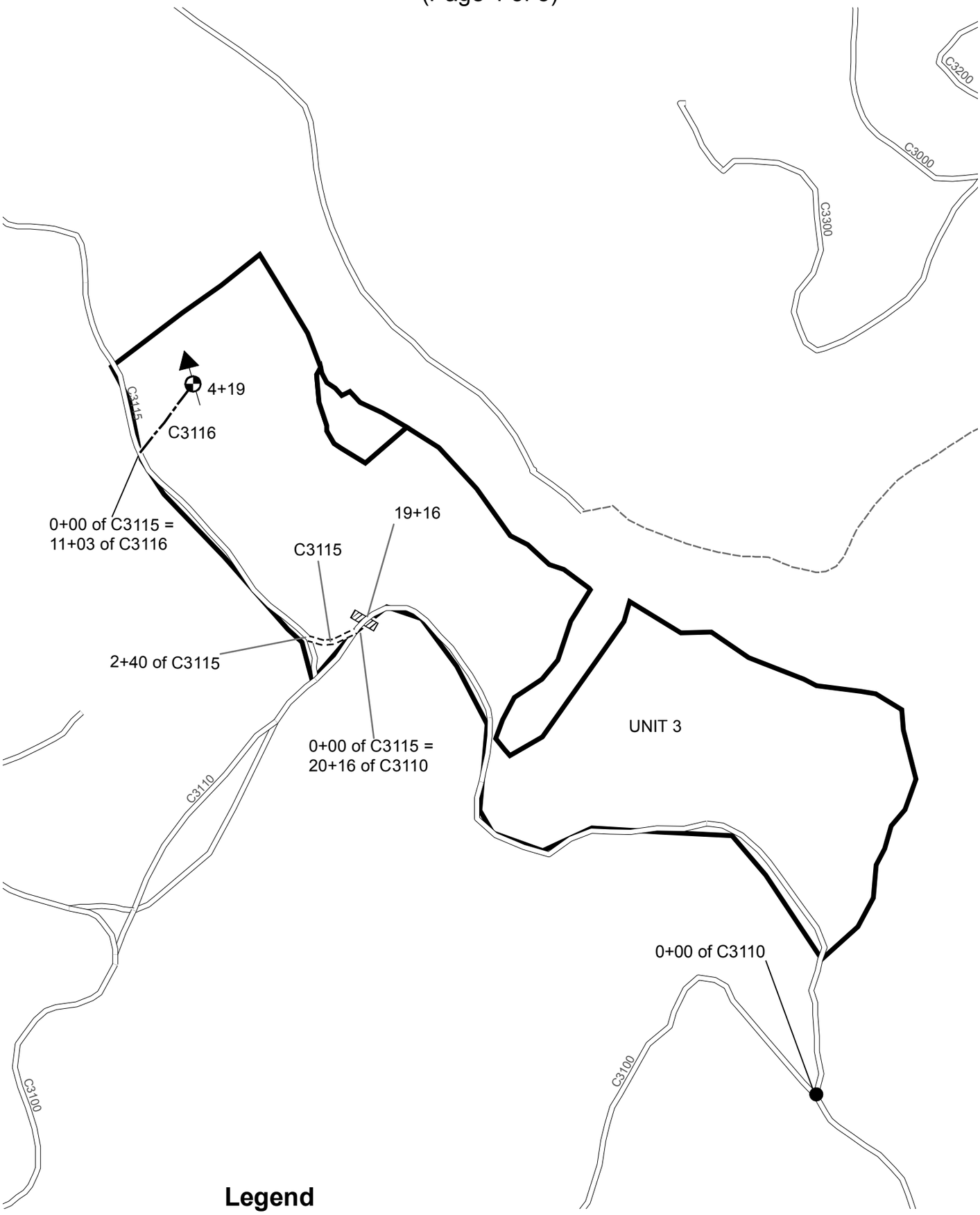
Legend

- OPTIONAL CONSTRUCTION
- PRE-HAUL MAINTENANCE
- FOREST ROADS
- TRAILS
- UNIT BOUNDARY
- DITCH OUT
- CULVERTS
- TURNOUTS
- LANDING

N

0 130 260 520 780 1,040
Feet

OUTCAST
ROAD PLAN MAP
(Page 4 of 5)



Legend

- LANDING
- OPTIONAL CONSTRUCTION
- PRE-HAUL MAINTENANCE
- REQUIRED CONSTRUCTION
- FOREST ROADS
- TRAILS
- UNIT BOUNDARY
- DITCH OUT
- CULVERTS
- TURNOUTS

N

0 210 420 840 1,260 1,680
Feet

OUTCAST
ROAD PLAN MAP
(Page 5 of 5)

Legend

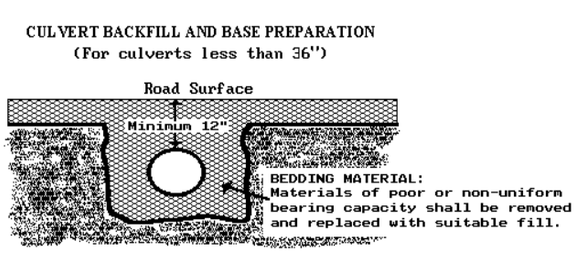
- FOREST ROADS
- TRAILS
- UNIT BOUNDARY
- ROCKPITS selection

N

0 55 110 220 330 440
Feet

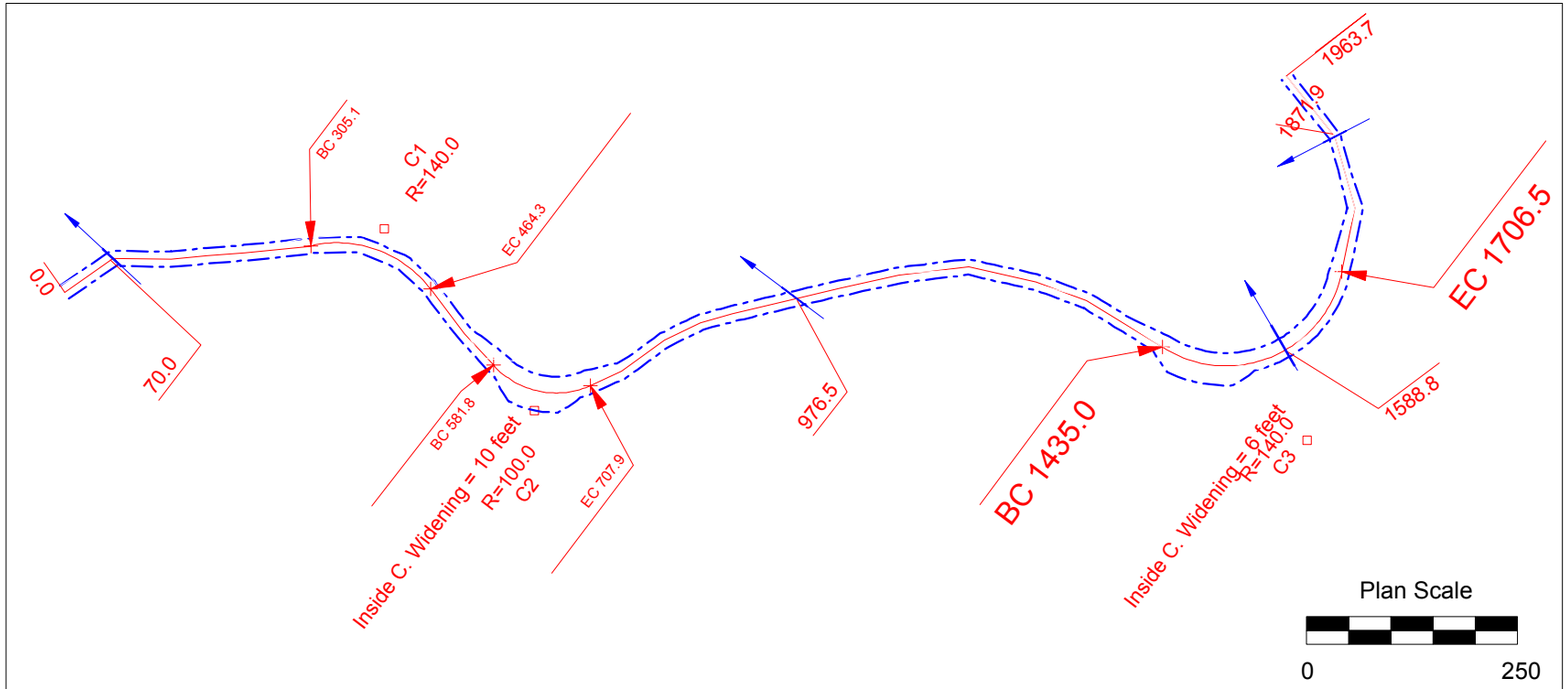
CULVERT LIST

Road Number	Location	Culvert Dia.	Culvert Gauge	Length (ft) Culvert	Length (ft) Downspt	Length (ft) Flume	Riprap (C.Y.) Inlet	Riprap (C.Y.) Outlet	Riprap (C.Y.) Type	Backfill Material	Placement Method	Const. Staked	Remarks
DC-LINE EXT.	0+70	18	-	30	15	-	.5	.5	8"+	NT	Machine	-	
	9+79	18	-	32	15	-	.5	.5	8"+	NT	Machine	-	
DC-LINE	222+00	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
DC5000	0+41	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
	2+17	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
	2+60	18	-	32	-	-	.5	.5	8"+	NT	Machine	-	
	5+10	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
	5+71	18	-	36	-	-	.5	.5	8"+	NT	Machine	-	
	7+90	24	-	36	-	-	1	1	8"+	NT	Machine	-	
DC5010	1+70	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
	5+41	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
	6+97	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	Type 5
C2020	51+25	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
C2026A	4+00	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
	9+84	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	
C2028	10+82	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	Old pipe removed, open trench exists.
	14+14	24	-	56	-	-	1	1	8"+	NT	Machine	-	Old pipe removed, open trench exists. Type 5 runs through.
C3115	19+16	18	-	30	-	-	.5	.5	8"+	NT	Machine	-	Existing culvert coincides with new road junction. Pipe must be removed, and new pipe installed 1 station up the road from the junction



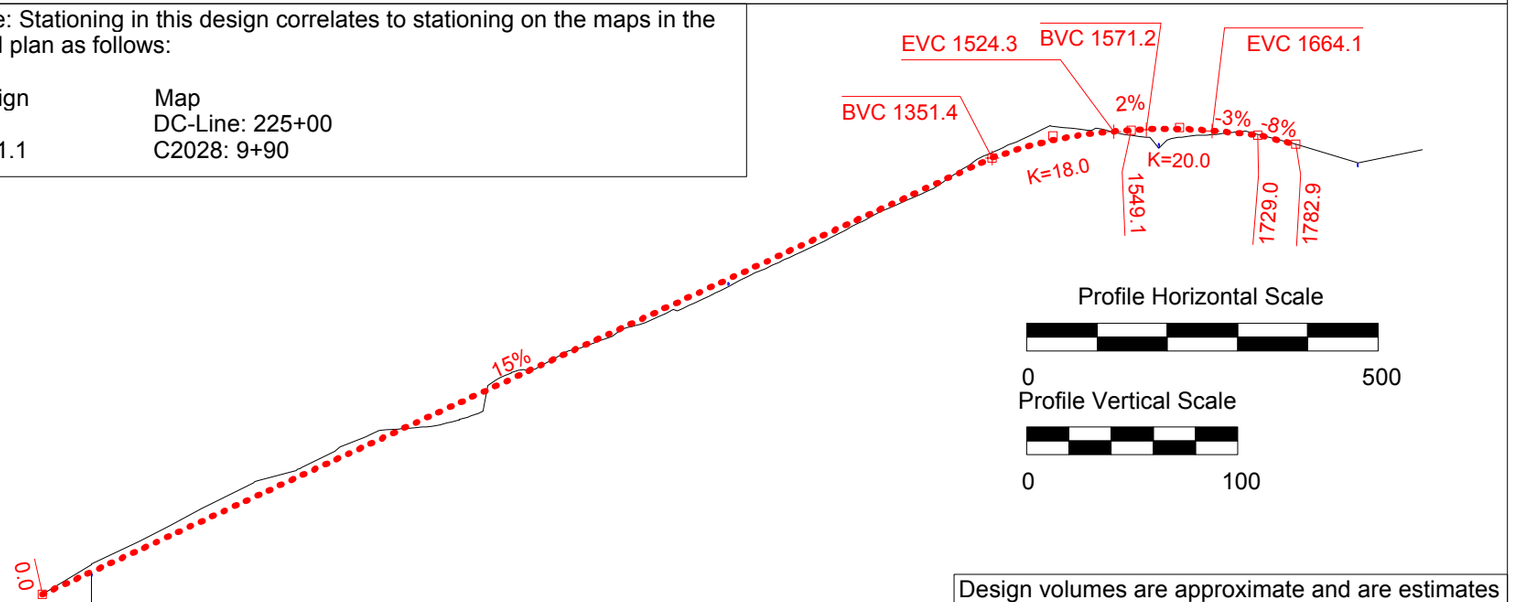
Key:

8"+ - Eight Inch Plus Rock-Graded to specs in 7.2.1.1-10
NT - Native (bank run)
SL - Select Fill
HL - Heavy Loose Riprap
LL - Light Loose Riprap
Flume - Half round pipe



Note: Stationing in this design correlates to stationing on the maps in the road plan as follows:

Design	Map
0.0	DC-Line: 225+00
1951.1	C2028: 9+90



Design volumes are approximate and are estimates

PLAN AND PROFILE: DC-LINE CONSTRUCTION & C2028 RECONSTRUCTION

Legend

Plan L-line Locatio	Profile Ground Ele
Plan Road Edges	Profile Subgrade
Plan Culverts	

Culvert List

L-Stn ft.	Cul DIA in.	Cul Fill ft.	Cul Len ft.	Cul Len L	Cul Len R
70.0	18	0.7	30.0	17.0	13.0
976.3	18	1.6	38.0	22.0	16.0
1588.6	24	7.0	56.0	34.0	22.0
1871.6	18	0.2	30.0	15.0	15.0

Curve Table

	C1	C2	C3
Angle (I)	65.1	72.3	111.1
BC Stn.	305.1	581.8	1435.0
EC Stn.	464.3	707.9	1706.5
Tangent (T)	89.4	73.0	204.1
Curve Len.(L)	159.2	126.1	271.5
Radius (R)	140.0	100.0	140.0

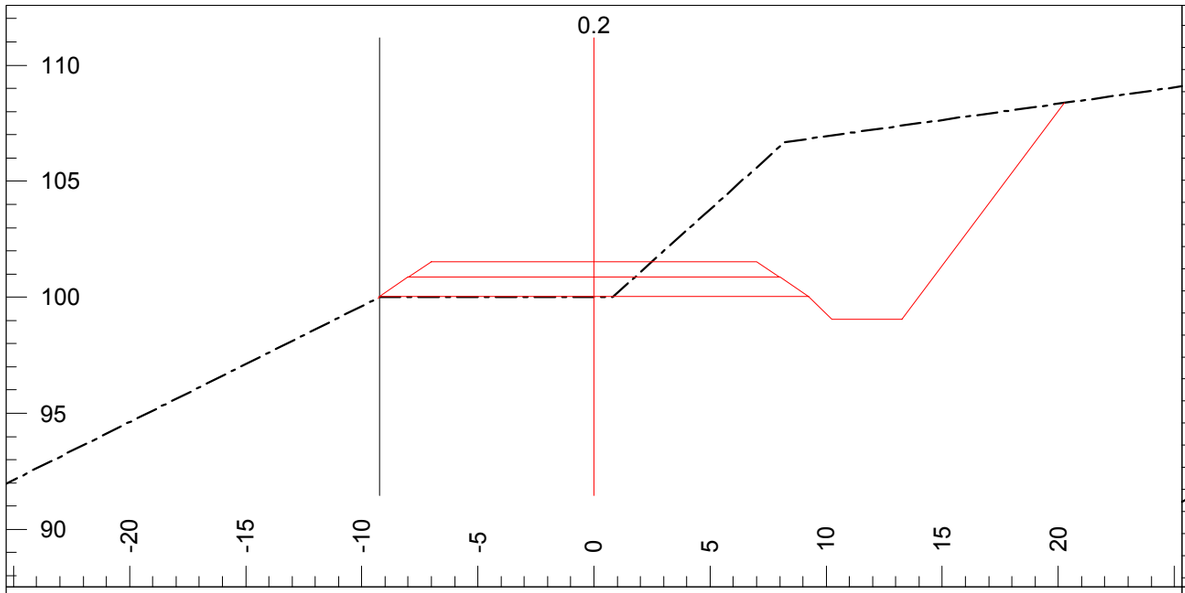
DEPARTMENT OF NATURAL RESOURCES

Timbersale: Out Cast
Agreement #: 30-078809

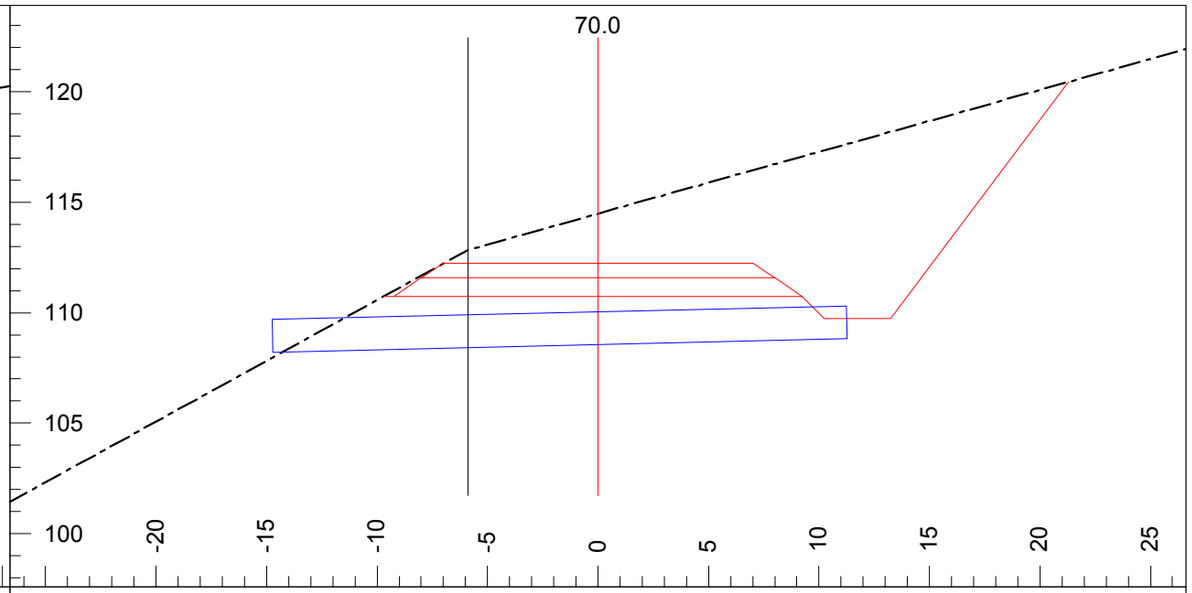
Roads: DC-Line & C2028	Stations: 0+00 to 1947.1

Legal Description:SECTIONS 31 & 32, TOWNSHIP 17 NORTH, RANGE 04 WEST, W.M.

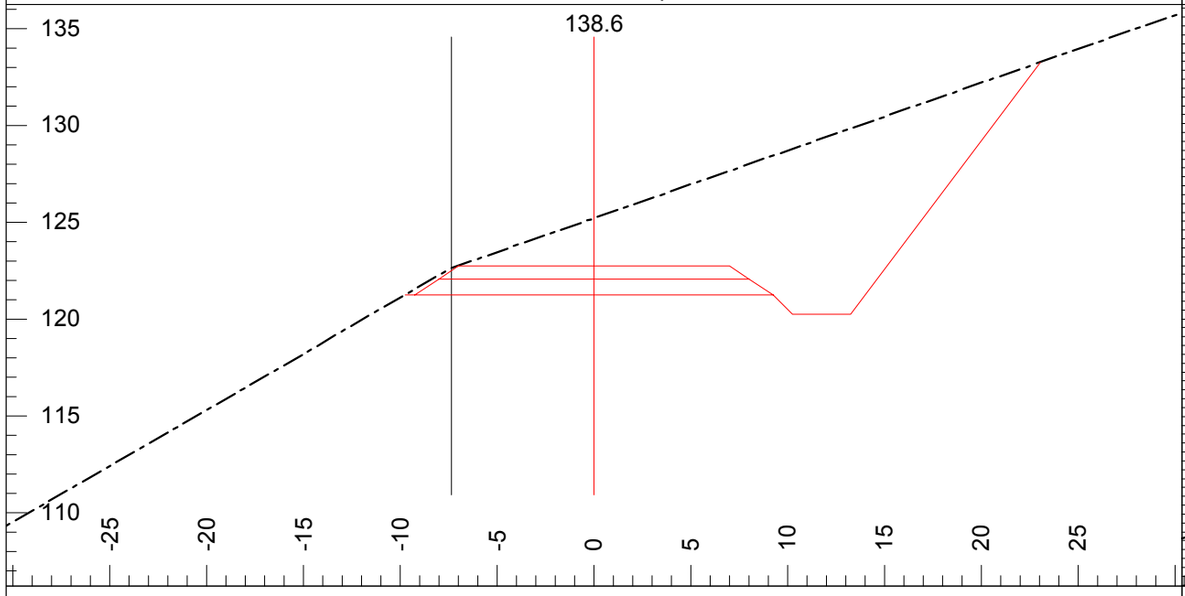
06/06/13	Designed Engineer: Lou Beck	Page 22 of 35



L-stn:	0.2	Grd.Lst:	15	Super L:	0	F Slope R:	133
P-Stn:	0.0	L-Ssl:	0	Super R:	0	Cut Dp:	-0.0
Grd.Nxt.	15	L-Ssr:	0	F Slope L:	-133		



L-stn:	70.0	Grd.Lst:	15	Super L:	0	F Slope R:	133
P-Stn:	71.3	L-Ssl:	-28	Super R:	0	Cut Dp:	3.7
Grd.Nxt.	15	L-Ssr:	28	F Slope L:	0		



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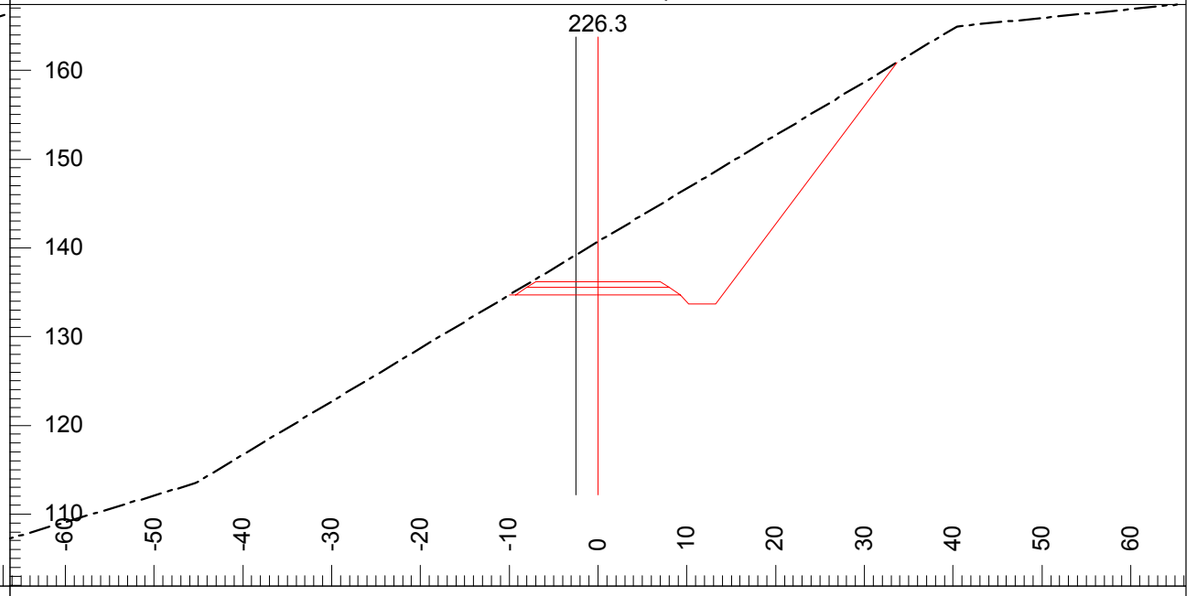
P-Stn:	141.3	L-Ssl:	-35	Super R:	0	Cut Dp:	4.0
Grd.Nxt.	15	L-Ssr:	35	F Slope L:	0		



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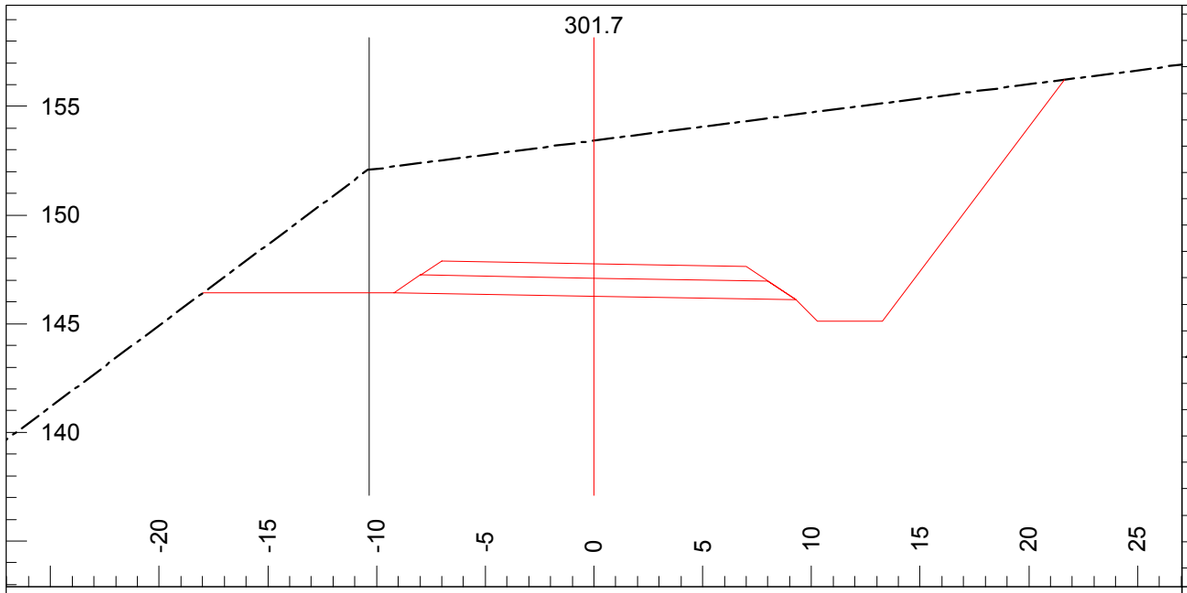
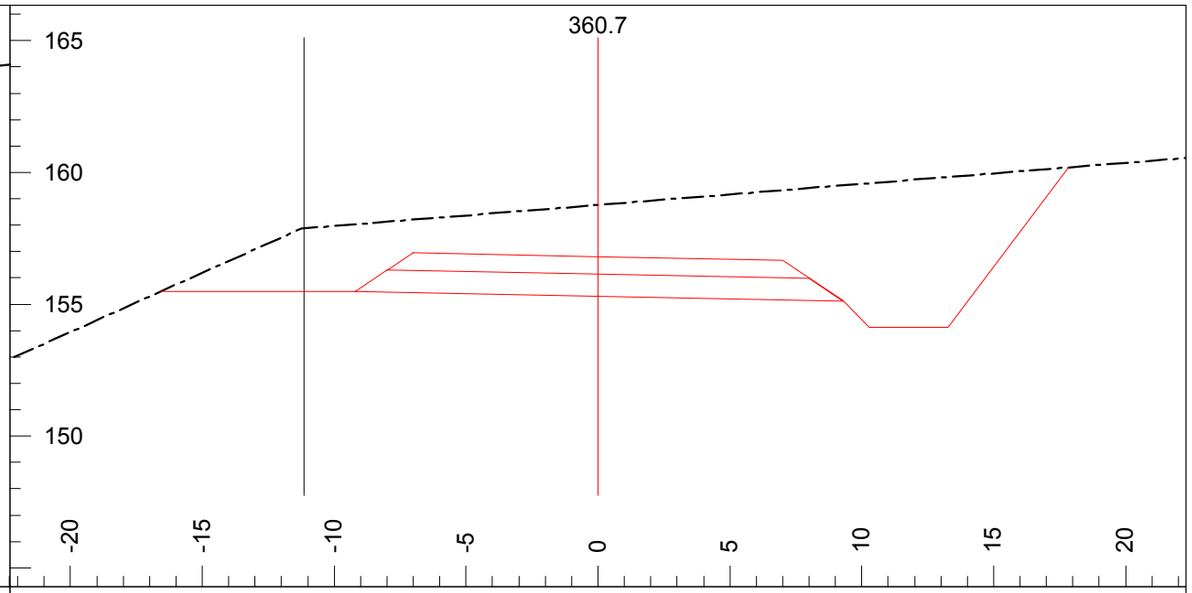
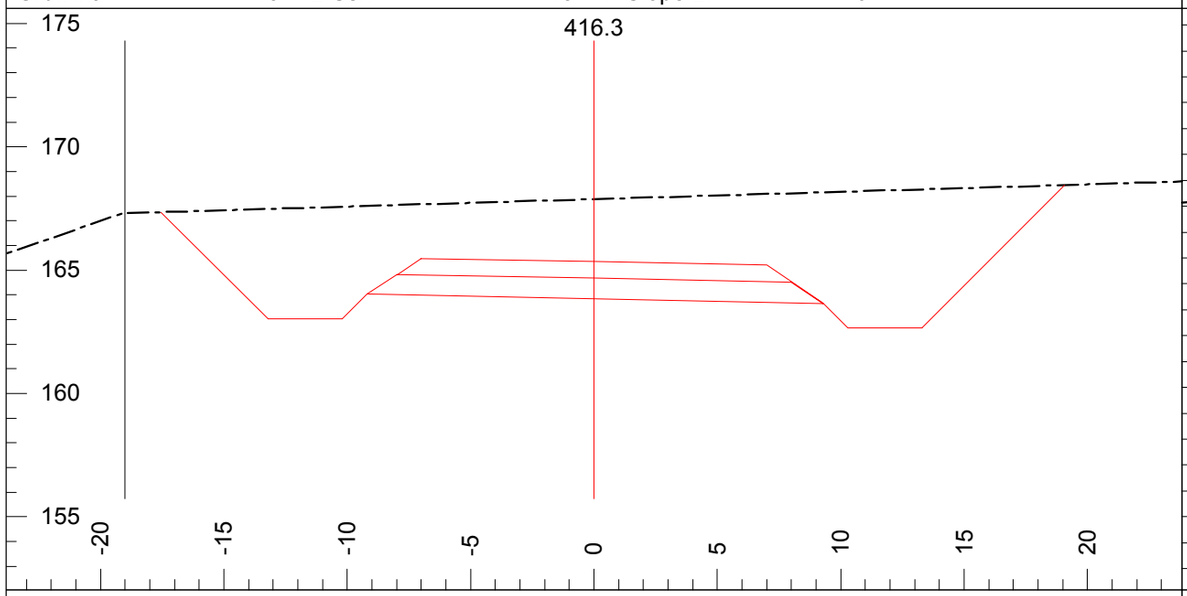
P-Stn:	228.6	L-Ssl:	-60	Super R:	0	Cut Dp:	6.0
Grd.Nxt.	15	L-Ssr:	60	F Slope L:	0		



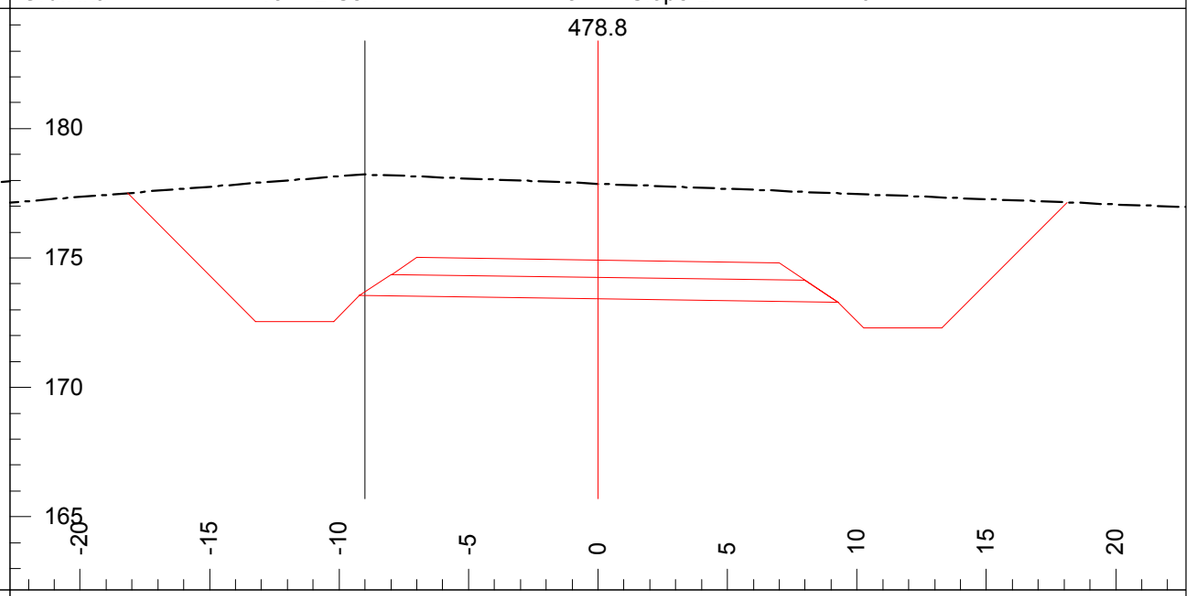
L-stn:	301.7	Grd.Lst:	15	Super L:	0	F Slope R:	133
P-Stn:	304.2	L-Ssl:	-13	Super R:	0	Cut Dp:	7.2
Grd.Nxt.	15	L-Ssr:	13	F Slope L:	0		



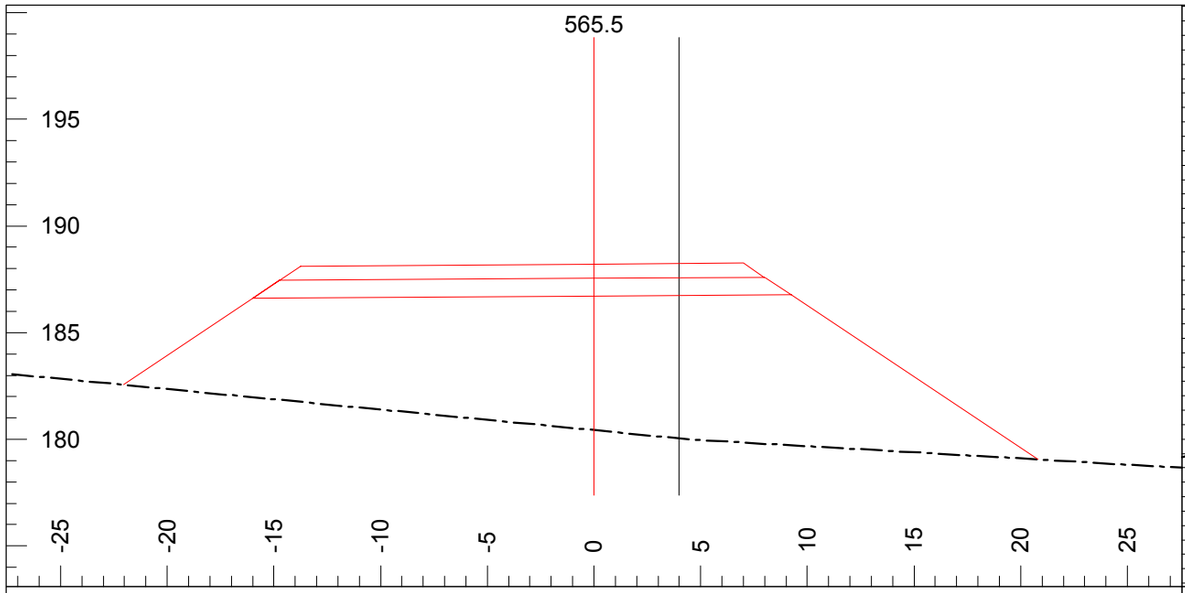
L-stn:	360.7	Grd.Lst:	15	Super L:	0	F Slope R:	133
P-Stn:	365.2	L-Ssl:	-8	Super R:	0	Cut Dp:	3.5
Grd.Nxt.	15	L-Ssr:	8	F Slope L:	0		



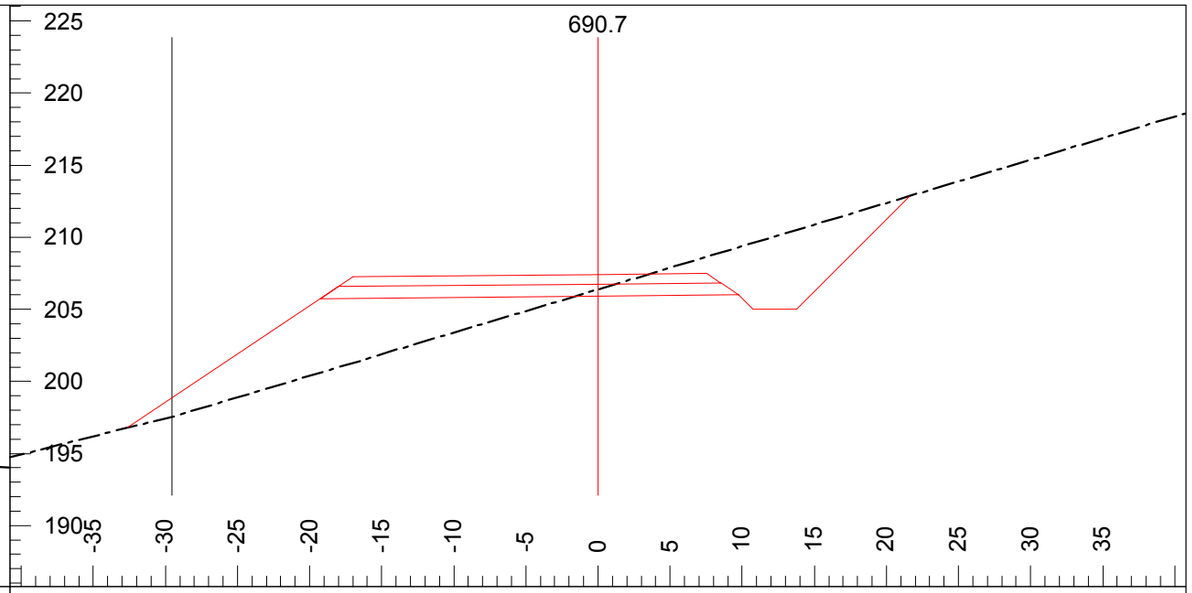
L-stn:	416.3	Grd.Lst:	15	Super L:	0	F Slope R:	100
P-Stn:	428.1	L-Ssl:	-3	Super R:	0	Cut Dp:	4.0
Grd.Nxt.	15	L-Ssr:	3	F Slope L:	100		



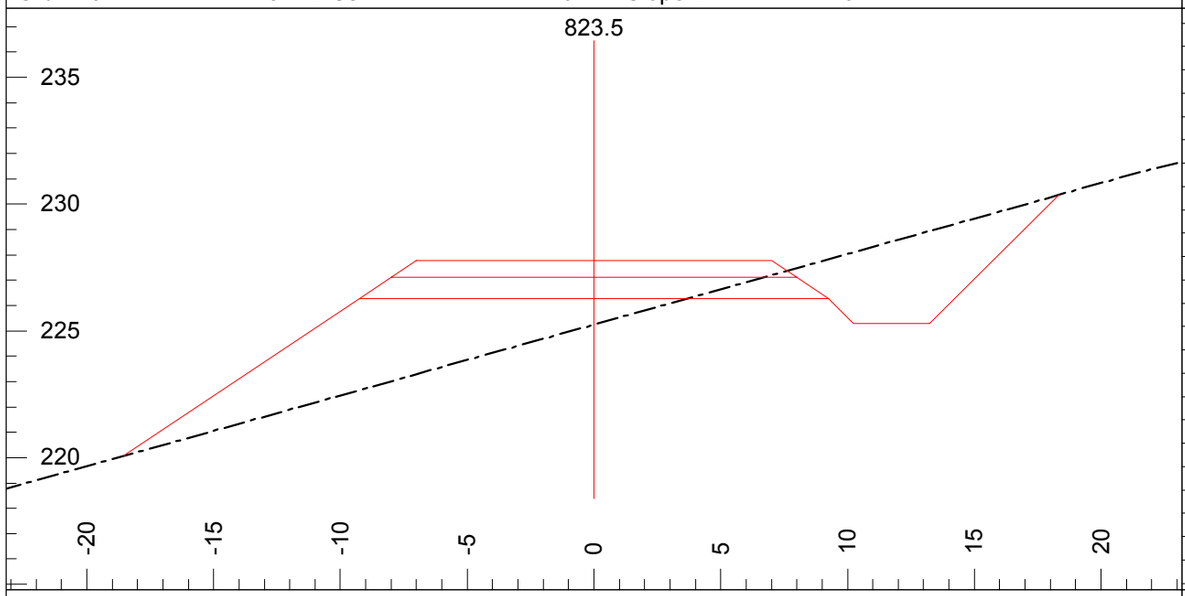
L-stn:	478.8	Grd.Lst:	15	Super L:	0	F Slope R:	100
P-Stn:	496.4	L-Ssl:	4	Super R:	0	Cut Dp:	4.4
Grd.Nxt.	15	L-Ssr:	-4	F Slope L:	100		



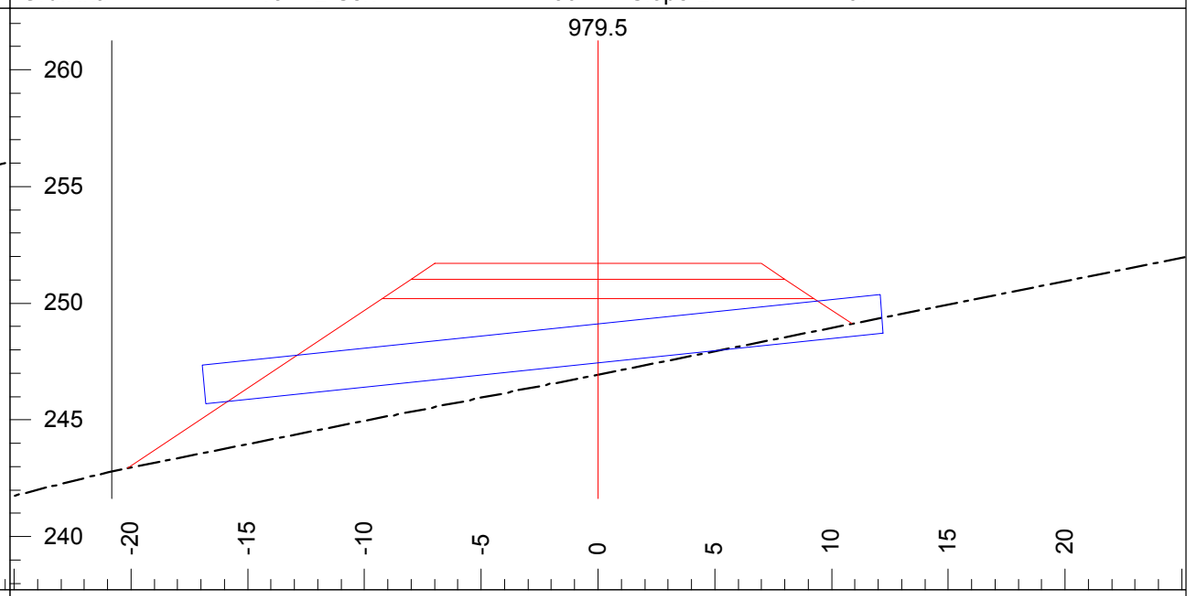
L-stn:	565.5	Grd.Lst:	15	Super L:	0	F Slope R:	-67
P-Stn:	584.5	L-Ssl:	10	Super R:	0	Cut Dp:	-6.3
Grd.Nxt.	15	L-Ssr:	-10	F Slope L:	-67		



L-stn:	690.7	Grd.Lst:	15	Super L:	0	F Slope R:	100
P-Stn:	691.5	L-Ssl:	-30	Super R:	0	Cut Dp:	0.5
Grd.Nxt.	15	L-Ssr:	30	F Slope L:	-67		



L-stn:	823.5	Grd.Lst:	15	Super L:	0	F Slope R:	100
P-Stn:	818.0	L-Ssl:	-28	Super R:	0	Cut Dp:	-1.0
Grd.Nxt.	15	L-Ssr:	28	F Slope L:	-67		



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P-Stn:	978.5	L-Ssl:	-20	Super R:	0	Cut Dp:	-3.2
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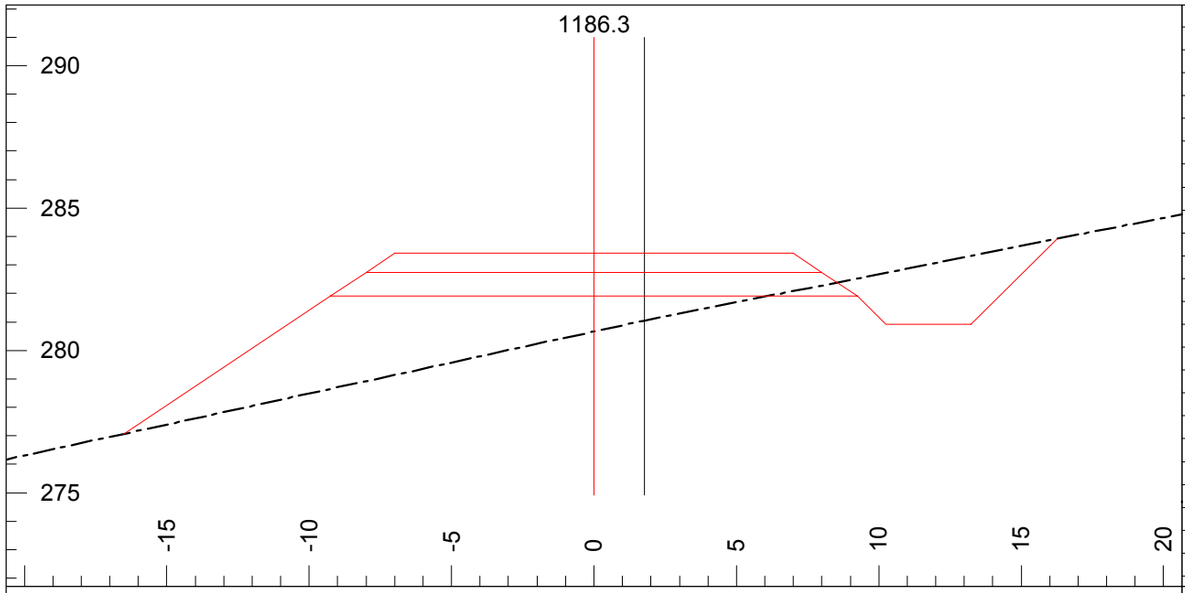
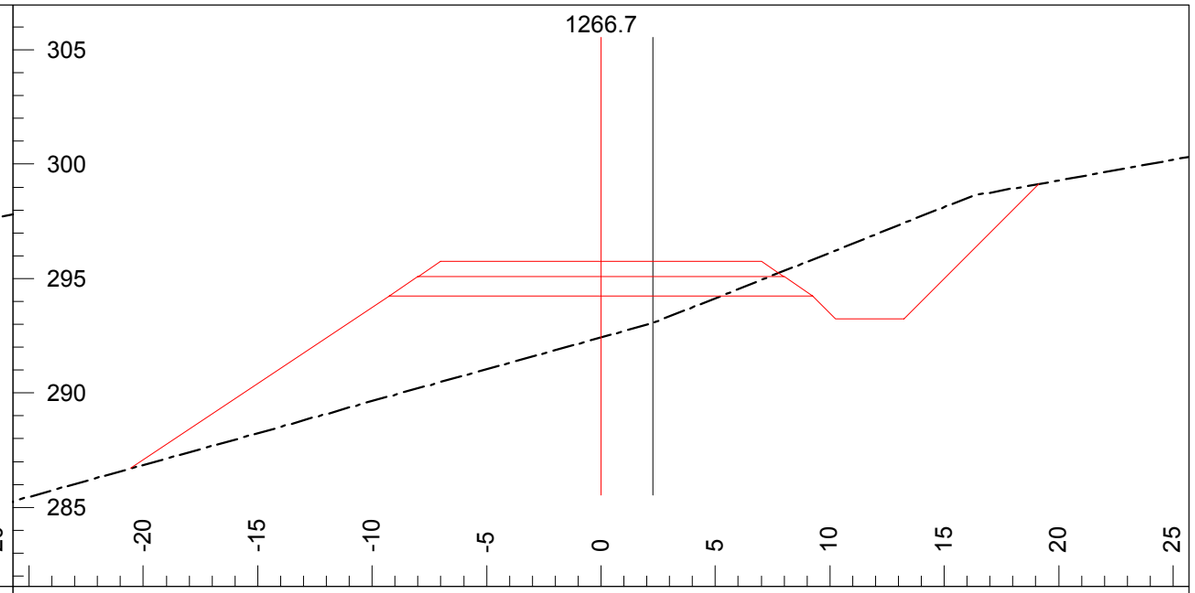


L-stn:	1186.3	Grd.Lst:	15	Super L:	0	F Slope R:	100
P-Stn:	1185.4	L-Ssl:	-22	Super R:	0	Cut Dp:	-1.2
Grd.Nxt.	15	L-Ssr:	22	F Slope L:	-67		



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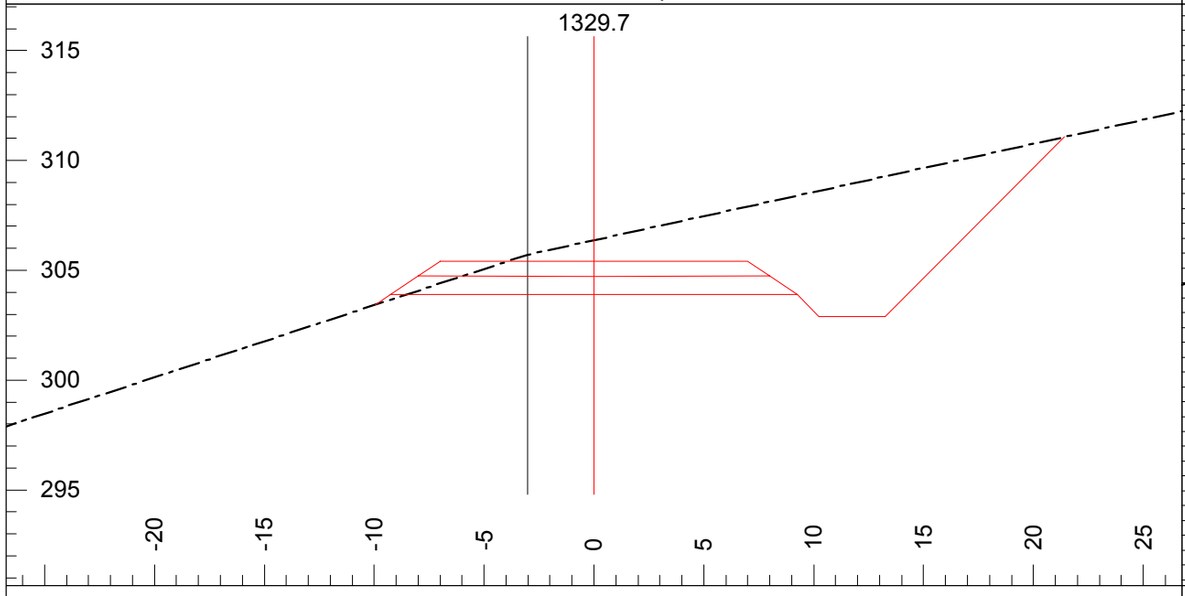
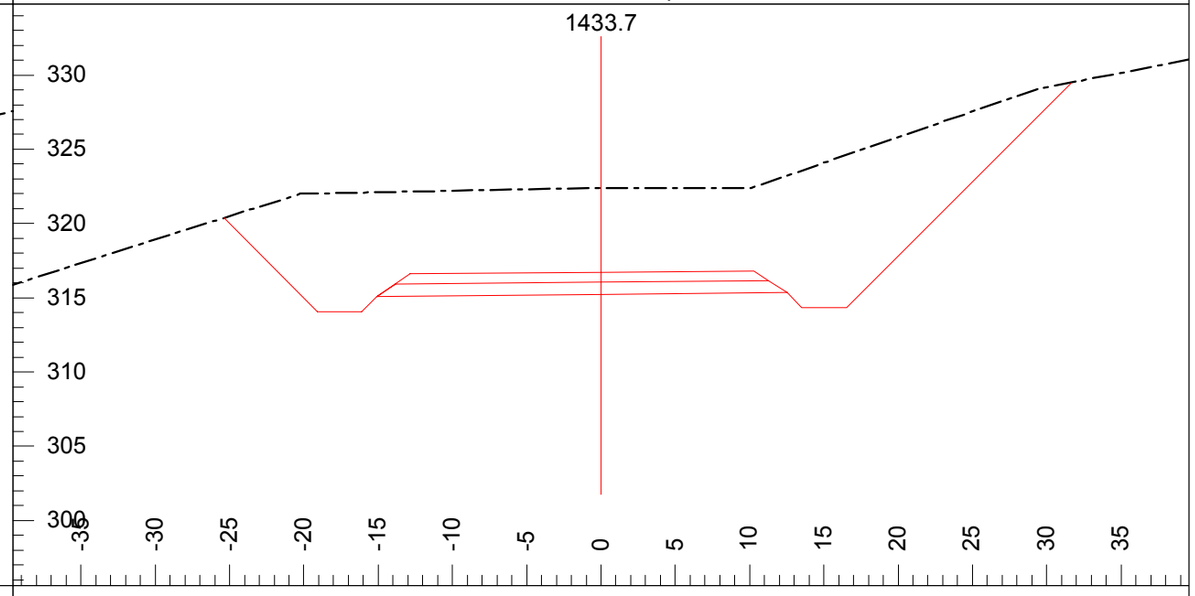
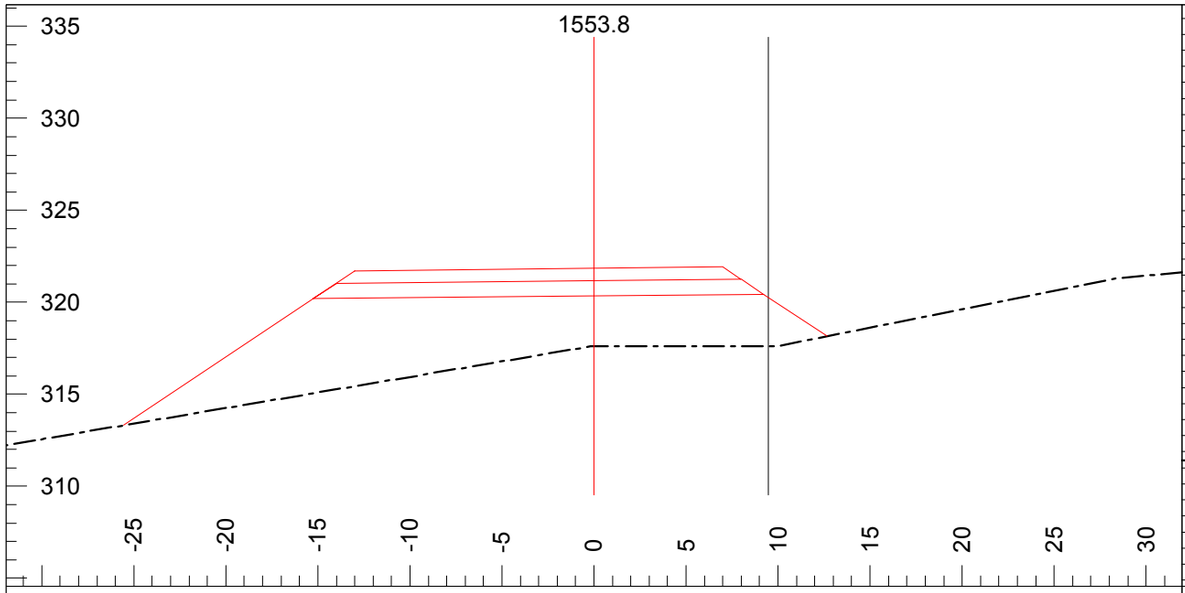
P-Stn:	1265.5	L-Ssl:	-28	Super R:	0	Cut Dp:	-1.8
Grd.Nxt.	15	L-Ssr:	28	F Slope L:	-67		



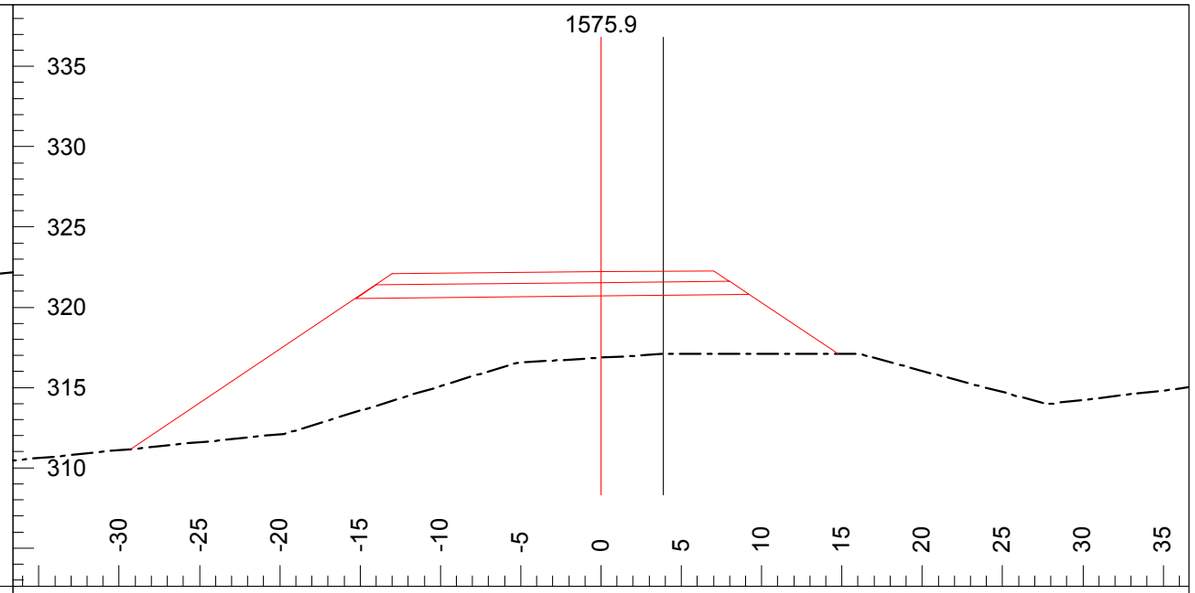
L-stn:	1329.7	Grd.Lst:	15	Super L:	0	F Slope R:	100
P-Stn:	1328.7	L-Ssl:	-22	Super R:	0	Cut Dp:	2.5
Grd.Nxt.	15	L-Ssr:	22	F Slope L:	-67		



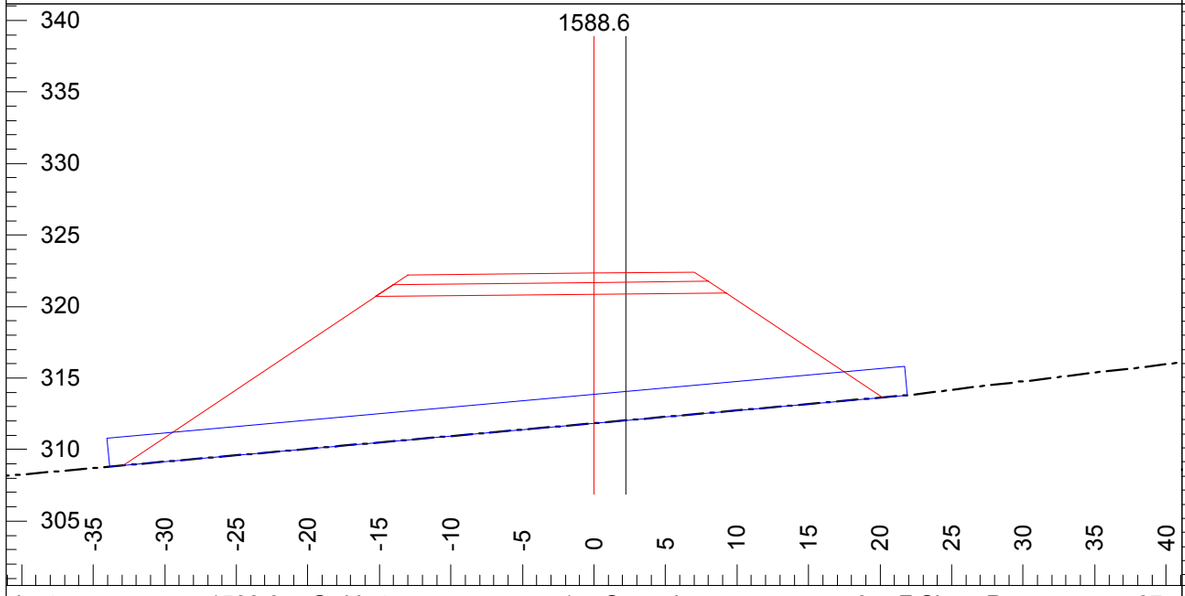
L-stn:	1433.7	Grd.Lst:	7	Super L:	0	F Slope R:	100
P-Stn:	1433.1	L-Ssl:	-2	Super R:	0	Cut Dp:	7.2
Grd.Nxt.	7	L-Ssr:	0	F Slope L:	100		



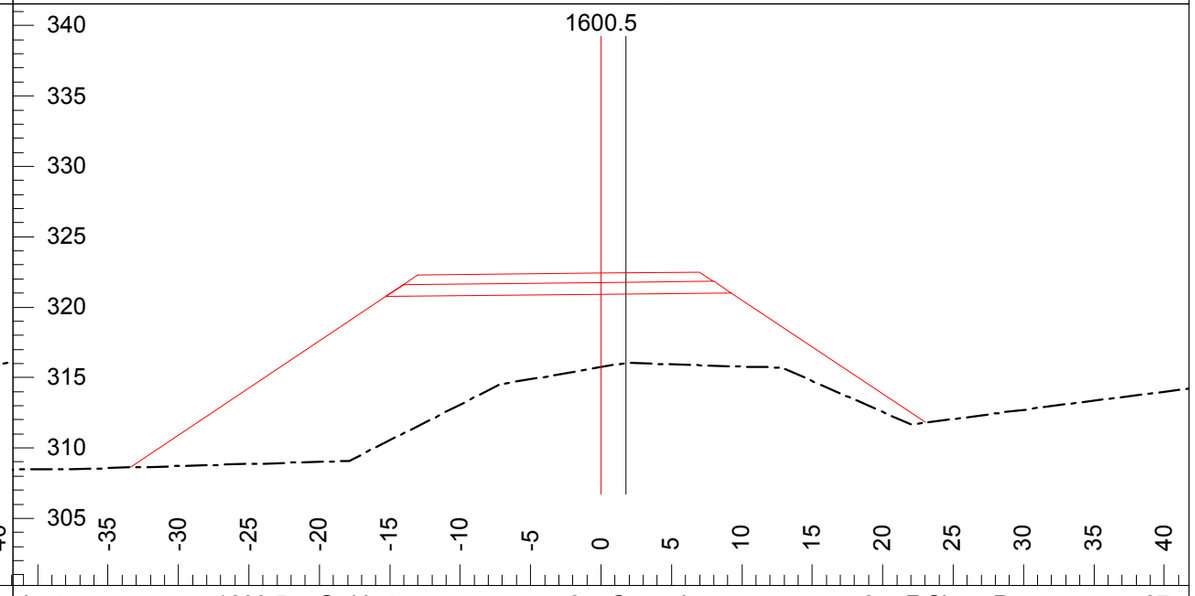
L-stn:	1553.8	Grd.Lst:	2	Super L:	0	F Slope R:	-67
P-Stn:	1553.1	L-Ssl:	0	Super R:	0	Cut Dp:	-2.8
Grd.Nxt.	2	L-Ssr:	0	F Slope L:	-67		



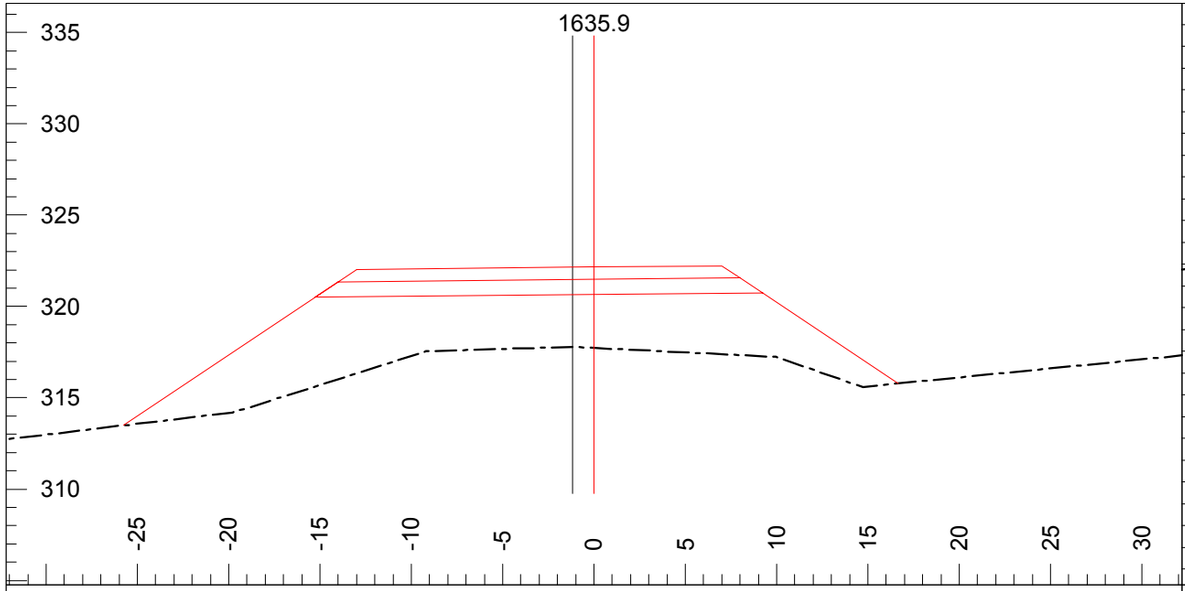
L-stn:	1575.9	Grd.Lst:	1	Super L:	0	F Slope R:	-67
P-Stn:	1578.6	L-Ssl:	-6	Super R:	0	Cut Dp:	-3.9
Grd.Nxt.	1	L-Ssr:	6	F Slope L:	-67		



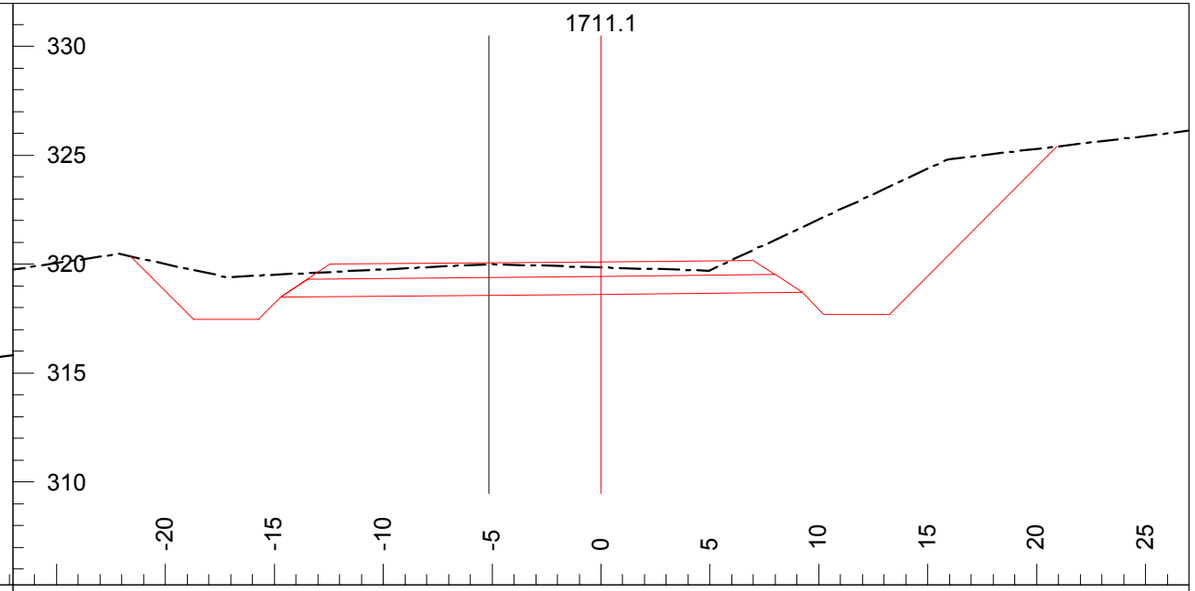
L-stn:	1588.6	Grd.Lst:	1	Super L:	0	F Slope R:	-67
P-Stn:	1591.2	L-Ssl:	-9	Super R:	0	Cut Dp:	-9.0
Grd.Nxt.	1	L-Ssr:	9	F Slope L:	-67		



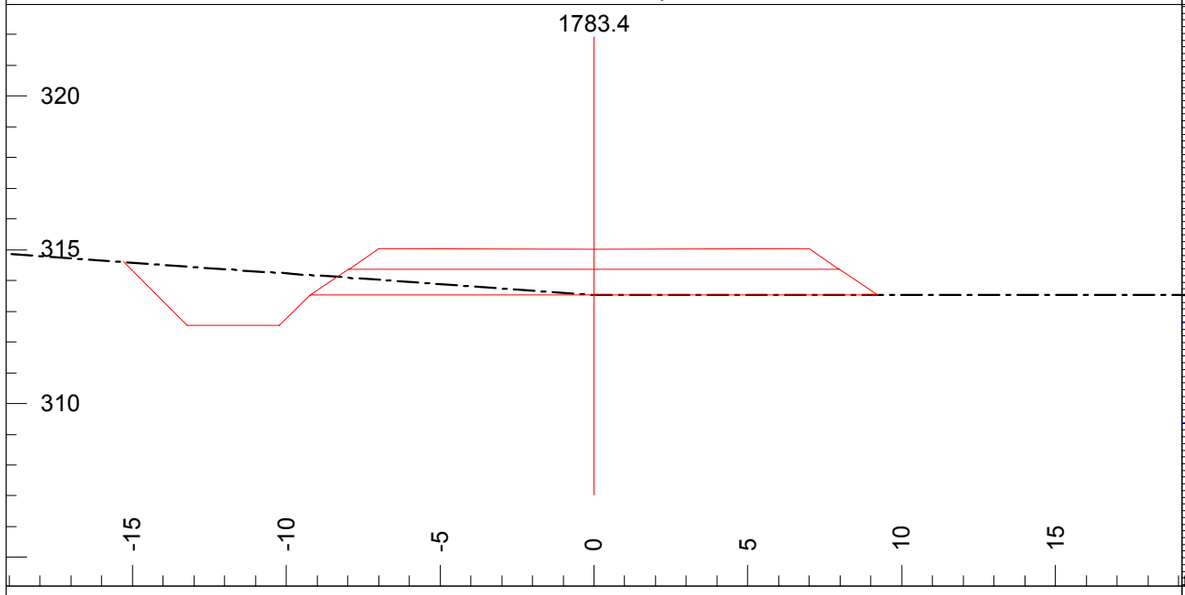
L-stn:	1600.5	Grd.Lst:	0	Super L:	0	F Slope R:	-67
P-Stn:	1603.2	L-Ssl:	-17	Super R:	0	Cut Dp:	-5.2
Grd.Nxt.	0	L-Ssr:	17	F Slope L:	-67		



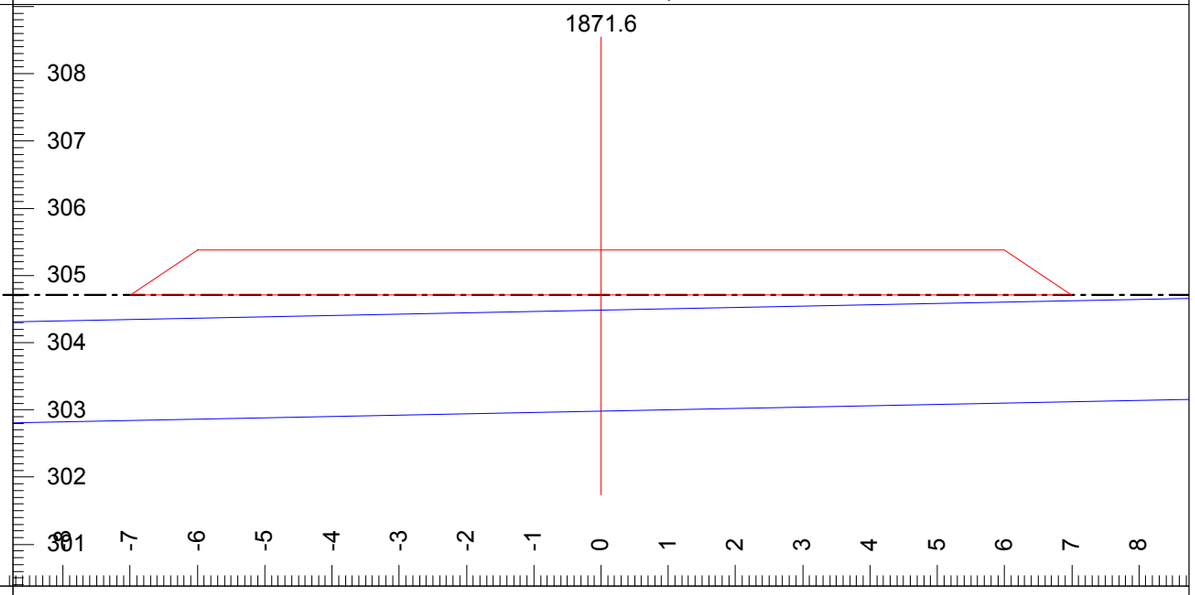
L-stn:	1635.9	Grd.Lst:	-2	Super L:	0	F Slope R:	-67
P-Stn:	1638.4	L-Ssl:	5	Super R:	0	Cut Dp:	-2.9
Grd.Nxt.	-2	L-Ssr:	-5	F Slope L:	-67		



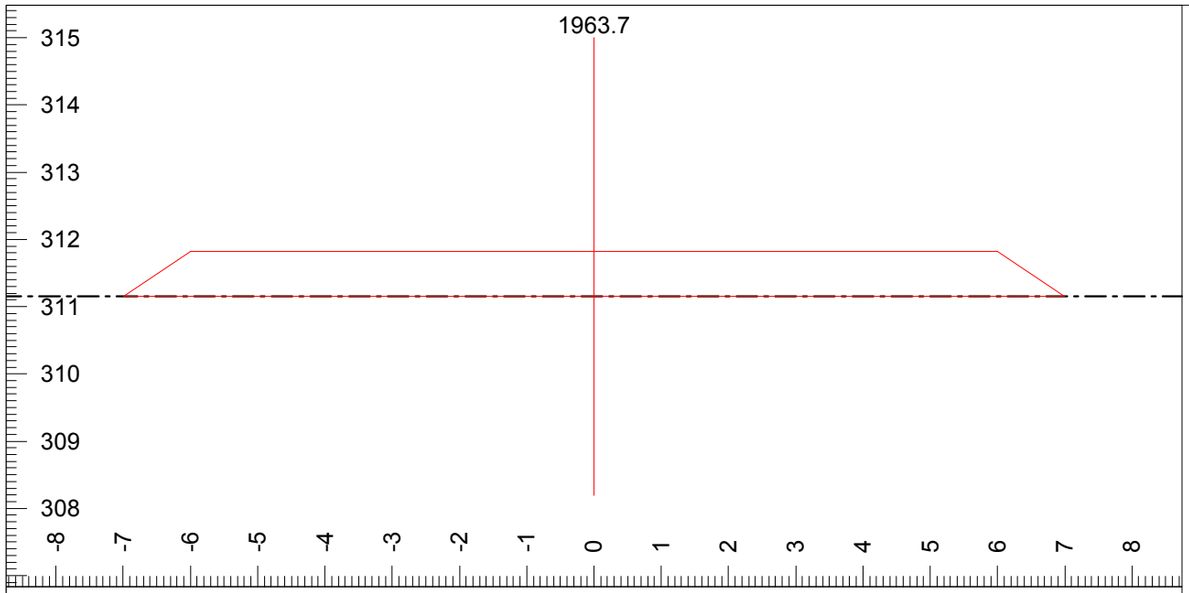
L-stn:	1711.1	Grd.Lst:	-3	Super L:	0	F Slope R:	100
P-Stn:	1712.1	L-Ssl:	3	Super R:	0	Cut Dp:	1.2
Grd.Nxt.	-3	L-Ssr:	-3	F Slope L:	100		



L-stn:	1783.4	Grd.Lst:	3	Super L:	0	F Slope R:	0
P-Stn:	1784.0	L-Ssl:	7	Super R:	0	Cut Dp:	0.0
Grd.Nxt.	-10	L-Ssr:	0	F Slope L:	100		

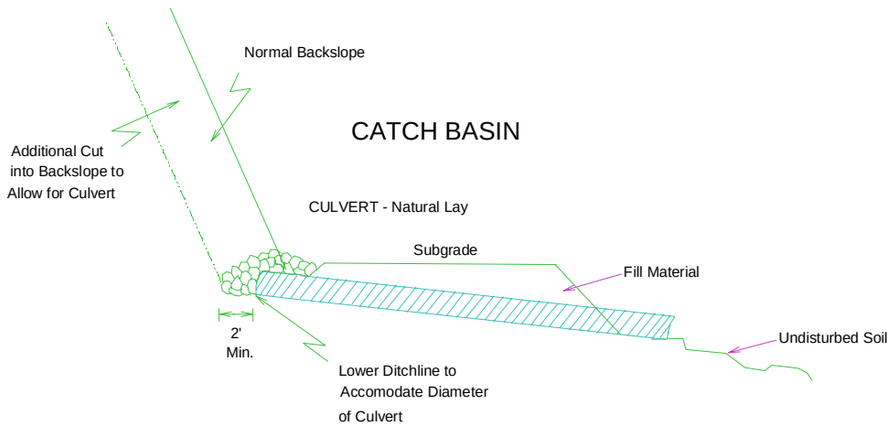


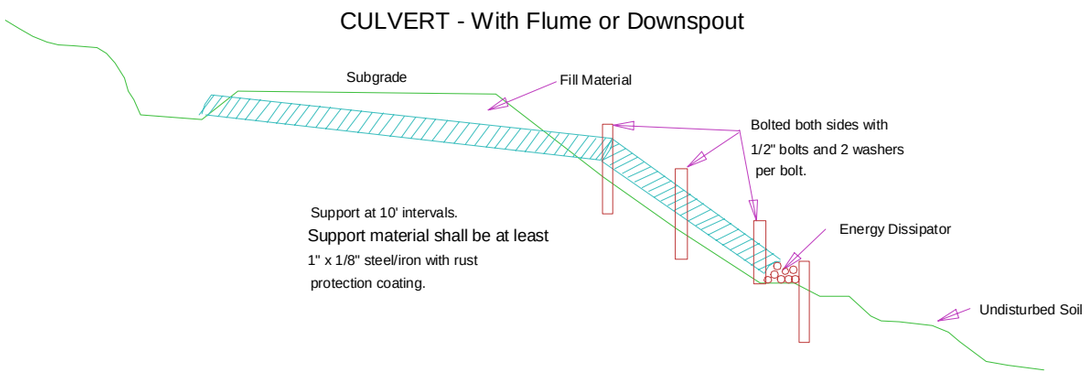
L-stn:	1871.6	Grd.Lst:	-10	Super L:	0	F Slope R:	0
P-Stn:	1872.2	L-Ssl:	0	Super R:	0	Cut Dp:	0.0
Grd.Nxt.	7	L-Ssr:	0	F Slope L:	0		



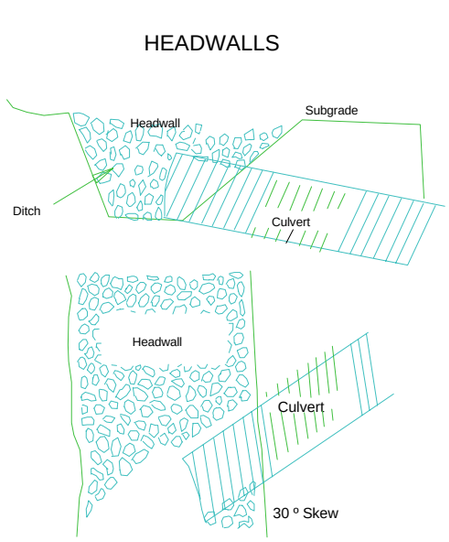
L-stn:	1963.7	Grd.Lst:	7	Super L:	0	F Slope R:	0
P-Stn:	1964.3	L-Ssl:	0	Super R:	0	Cut Dp:	0.0
Grd.Nxt.	n/a	L-Ssr:	0	F Slope L:	0		

CULVERT AND DRAINAGE SPECIFICATION DETAIL

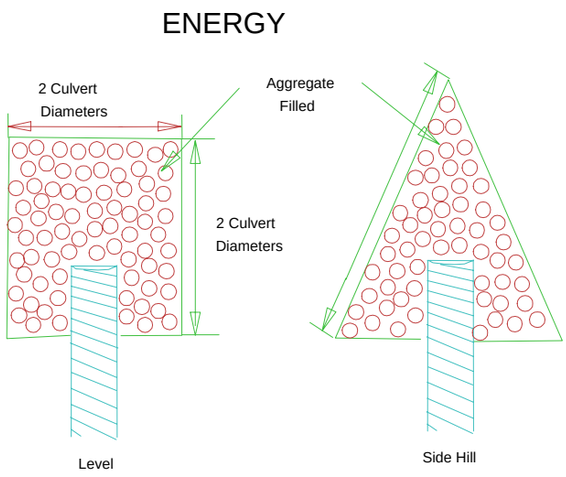




Proper preparation of foundation and placement of bedding material shall precede the installation of all culvert pipe. This includes necessary leveling of the native trench bottom and compaction of required bedding material to form a uniform dense unyielding base. The backfill material shall be placed so that the pipe is uniformly supported along the barrel.



Headwalls to be constructed of material that will resist erosion.



Dissipator Specifications:
Depth: 1 culvert diameter
Aggregate: as specified in the CULVERT LIST.

CULVERT AND DRAINAGE SPECIFICATION DETAIL

(Page 2 of 2)

POLYETHYLENE PIPE INSTALLATION

INSTALLATION REQUIREMENTS:

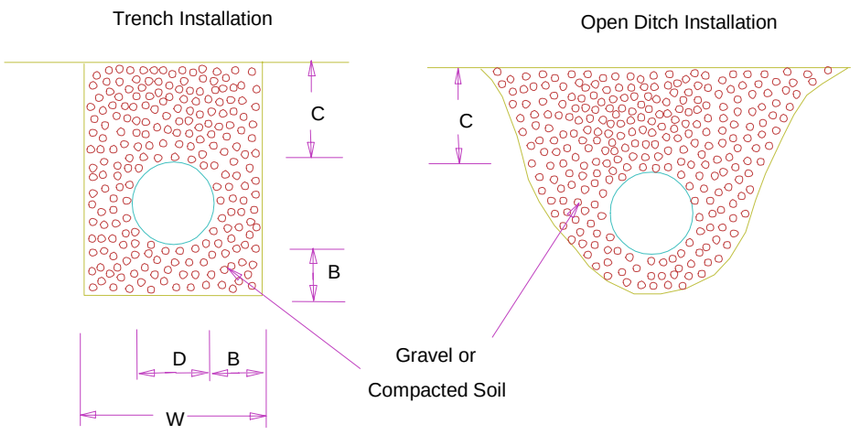
1. Crushed stone, gravel, or compacted soil backfill material shall be used as the bedding and envelope material around the culvert. The aggregate size shall not exceed 1/6 pipe diameter or 4" diameter, whichever is smaller.

2. The corrugated pipe shall be laid on grade, on a layer of bedding material as shown for the two types of installations. If native soil is used as the bedding and backfill material, it shall be well compacted in six inch layers under the haunches, around the sides and above the pipe to the recommended minimum height of cover.

3. Either crushed aggregate or flexible (asphalt) pavement may be laid as part of the minimum cover requirements.

4. Site conditions and availability of bedding materials often dictate the type of installation method used.

5. The load bearing capability of flexible conduits is dependent on the type of backfill material used and the degree of compaction achieved. Crushed stone and gravel backfill materials typically reach a compaction level of 90-95% AASHTO standard density without compaction. When native soils are used as backfill material, a compaction level of 85% of that material is required. This minimum compaction can be achieved by either hand or mechanical tamping. Purchaser shall test the compaction level and bare all associated costs.



MINIMUM DIMENSIONS
Trench or Open Ditch Installation

Nominal Diameter	Minimum Thickness	Minimum Cover	Min. Trench Width
D	B	C	W
18"	6"	12"	36"
24"	6"	12"	42"
30"	6"	12"	48"
36"	6"	12"	54"

STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES

FOREST ACCESS ROAD
MAINTENANCE SPECIFICATIONS

1. CONSTRUCTION AND RECONSTRUCTION (Prior to acceptance to the contract or acceptance on a timber sale).

A. Cuts and Fills
   1. Maintain slope lines as constructed. Remove slides from the ditches and roadway. Replace fills to 12:1 slopes with selected material or as directed. Remove overhanging material from the cut slopes.
   2. Material from slides or other sources requiring removal shall not be deposited in streams or at locations where it will erode into streams or water courses.
   3. Undesirable slide materials and debris shall not be mixed into the surface material.

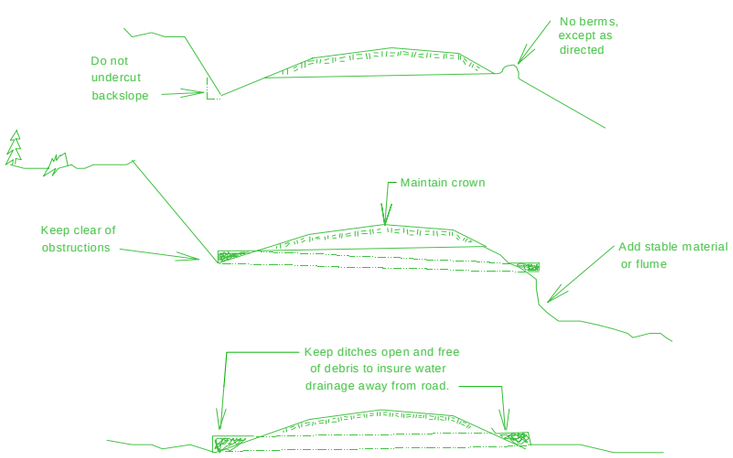
B. Surface
   1. Grade and shape the road surface, turnouts, and shoulders to the original crown, inslope or outslope as directed to provide suitable traveled surface and surface water runoff in an even, unconcentrated manner.
   2. Blading must not undercut the backslope at the bottom of the ditchline or cut geotextile at centerline.
   3. Watering may be required to control dust and to retain fine surface rock.
   4. Desirable surface material shall not be bladed off the roadway.
   5. Replace surface material lost or worn away.
   6. Remove berms except as directed by the State.
   7. Barrel spread soft spots to prevent degradation of geotextile.

C. Drainage
   1. Keep ditches and drainage channels at outlets and inlets of culverts clear of obstructions and functioning as intended.
   2. Inspect and clean culverts at least monthly, with additional inspections during storms and periods of high runoff. This must be done even during periods of inactivity.
   3. Add stable material at the outlet end of the culvert as needed to stabilize the stream bed. Material must be clean rock of similiar gradation to the stream bed material.
   4. Headwalls: maintain to the road shoulder level with material that will resist erosion.
   5. Keep silt bearing surface runoff from getting into live streams.

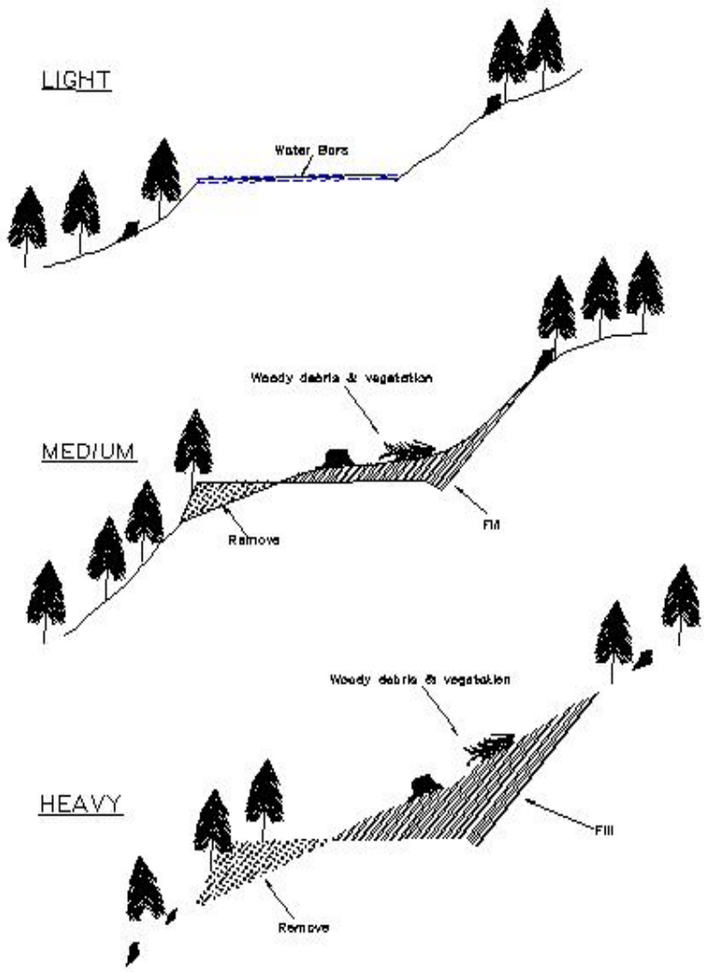
D. Structures
   Repair bridges, culverts, cattleguards, fences, and other road structures to the condition required by the construction specifications.

E. Termination of Use or End of Season
   Do maintenance work to minimize damage from the elements such as blading to insure correct runoff, ditch, and culvert cleaning and water bars.

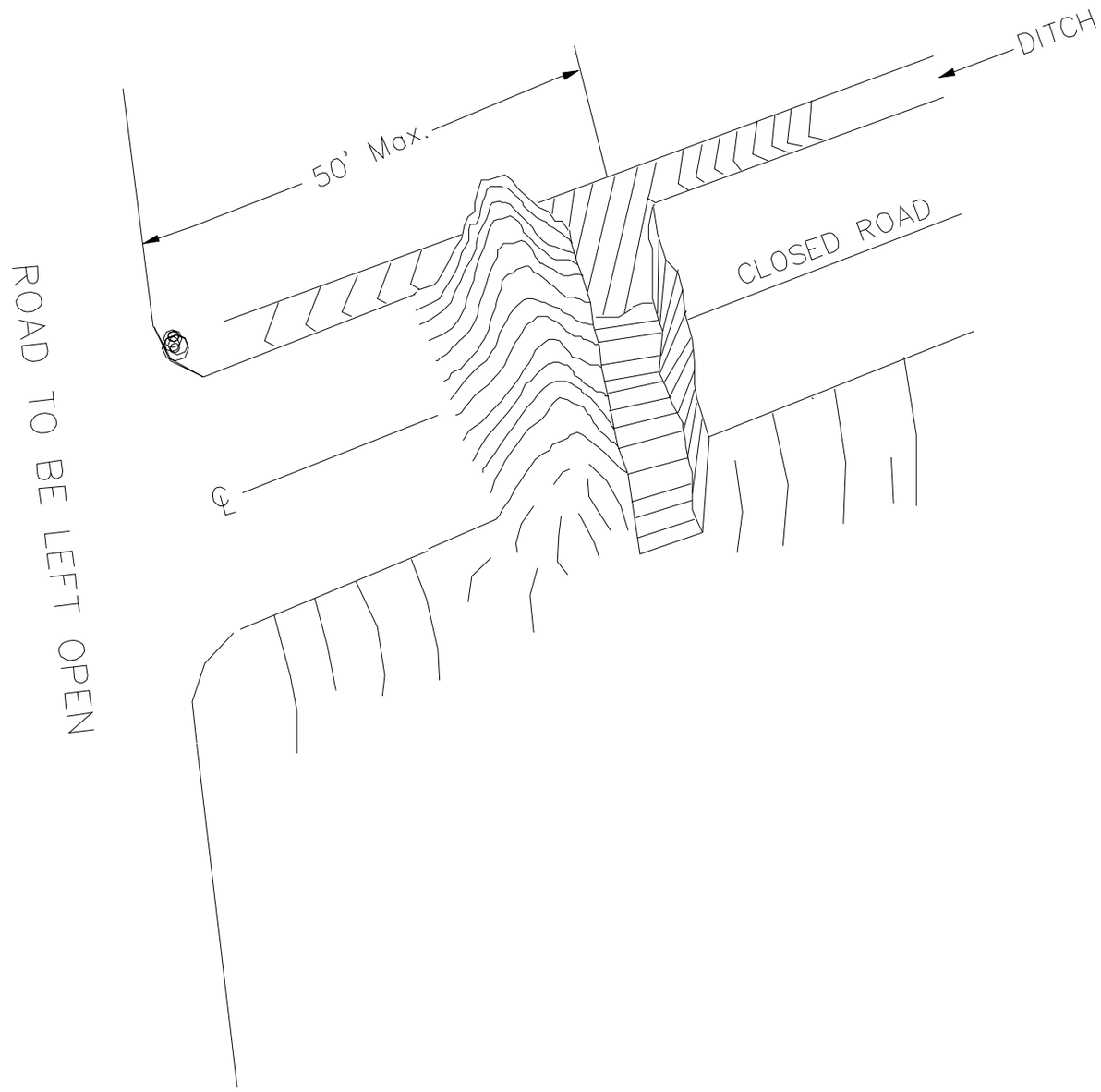
F. Debris
   Remove fallen timber, limbs, and stumps from the slopes or roadway.



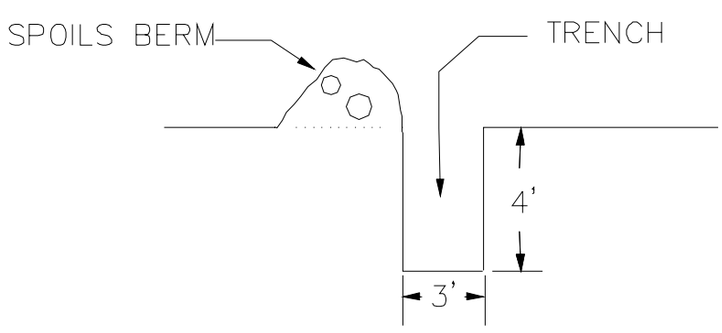
ROAD ABANDONMENT CROSS SECTIONS



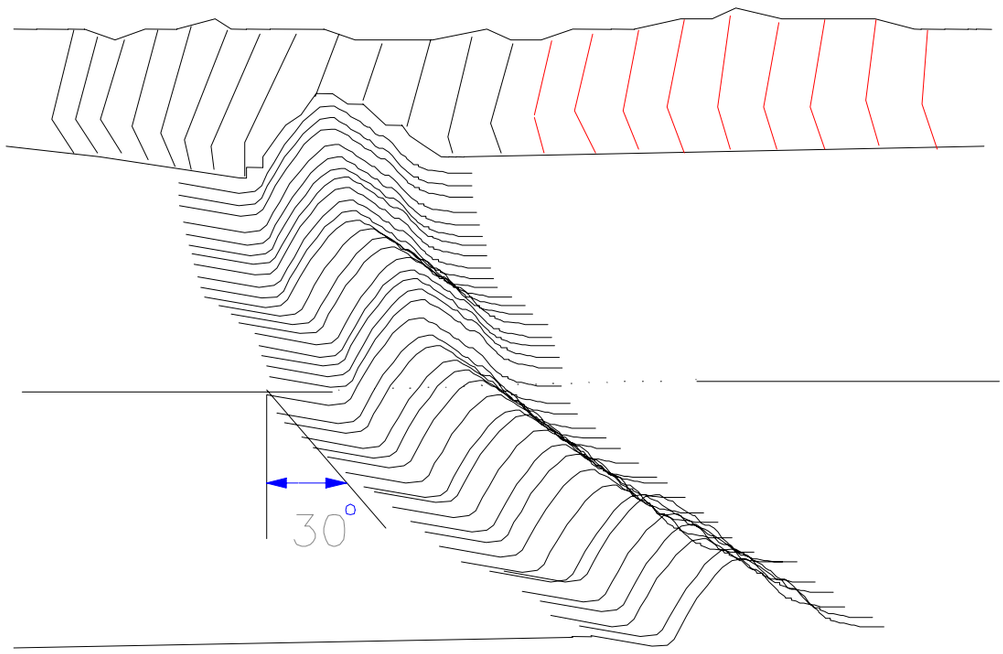
TANK TRAP DETAIL

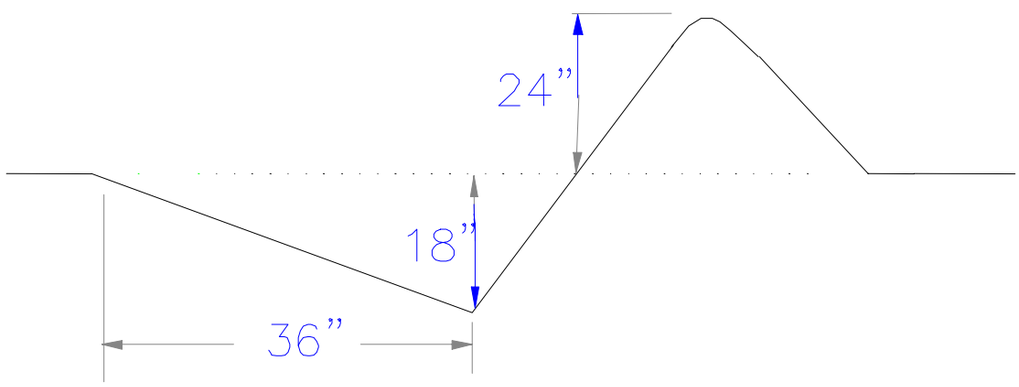


CROSS SECTION AT CENTERLINE



NON-DRIVABLE WATER BAR DETAIL





STATE OF WASHINGTON
DEPARTMENT OF NATURAL RESOURCES
PACIFIC CASCADE REGION

LOW BANK ROCK PIT DEVELOPMENT PLAN

NW ¼, SW ¼, Section 15, Township 17 North, Range 04 West, W.M.

1. Oversize material shall be utilized for crushing prior to development in any other area.

2. Mining shall begin in Area A and development shall continue into Area B followed by Area C.

3. All vegetation including stumps shall be cleared a minimum of 30 feet beyond the top of all working faces. Trees shall be cleared to a minimum of ¾ of the height of the tallest tree adjacent to the pit. The Contractor shall maintain a minimum of 25 foot wide stripped area from the pit face at all times.

4. Overburden shall be pushed to the designated waste area and compacted. Minimal acceptable compaction is achieved by placing waste material in 2 foot or shallower lifts and running excavation equipment over entire width of the lifts.

5. Root wads and organic debris larger than one cubic foot in volume shall be separated from overburden material and piled in the designated waste area.

6. Pit faces shall not exceed 30 feet in height and shall be sloped no steeper than 1/2:1. Faces with heights over 20 feet shall be sloped at ¼:1.

7. Working bench width shall be a minimum of 30 feet.

8. The pit floor shall have continuity of slope be left in a smooth and neat condition, providing drainage to the northeast at a minimum of 2 percent. All knobs, bumps, or extrusions shall be removed to the designated floor level by excavation or drill and shoot techniques.

9. The location and amount of material to be placed in a stockpile are subject to approval of the Contract Administrator. All stock piled material shall be maintained in a neat and useable condition.

10. Oversize material is defined as rock fragments larger than two feet in any direction. At the conclusion of operations, oversize material shall be placed as directed by the Contract Administrator. All existing oversize material shall be utilized prior to the development of that area.

11. At the end of operations, pit faces and walls shall be scaled and cleared of loose and overhanging material and benches shall have safety berms constructed or access blocked to highway vehicles. Roads accessing the top of pit walls shall similarly be blocked to prevent highway vehicle access.

12. All exposed soil in the waste area shall be grass seeded in accordance with Road Plan clause 5.4-3.1.

13. Reclamation will not be required following use.

14. All operations shall be carried out in compliance with all regulations of:
    a. Regulations and Standards Applicable to Metal and Nonmetal Mining and Milling Operations@ (30 CFR) U.S. Department of Labor, Mine Safety and Health Administration.
    b. Safety Standards – Metal and Nonmetallic Mines, Quarries, Pits, and Crushing Operations" (296-61 WAC), Washington Department of Labor and Industries.
    c. "Safety Standards for Construction Work" (296-155 WAC), Washington Department of Labor and Industries.

15. The Operator shall submit an informational drilling and shooting plan to the Contract Administrator 10 working days prior to any drilling (Form #M-126PAC).

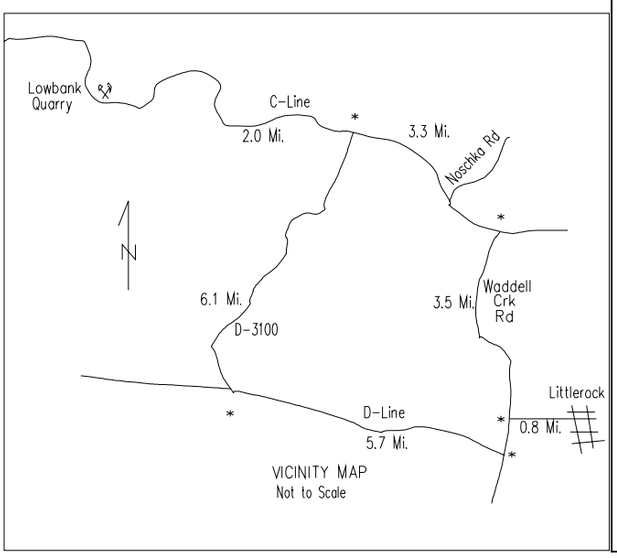
16. At the completion of rock source operations, Purchaser shall ask Contract Administrator for written approval of final rock source condition and compliance with the terms of this plan.

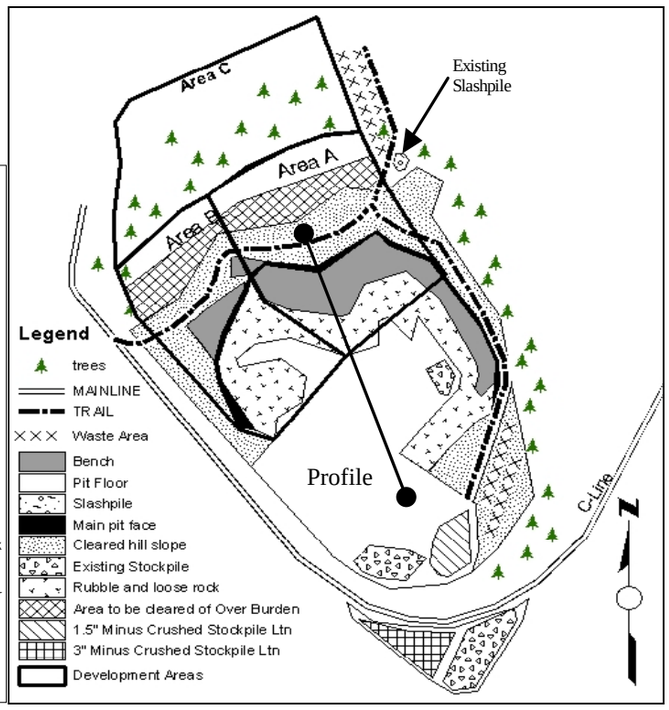
17. The pit area shall be worked and left in a condition that future operations may proceed in an orderly manner.

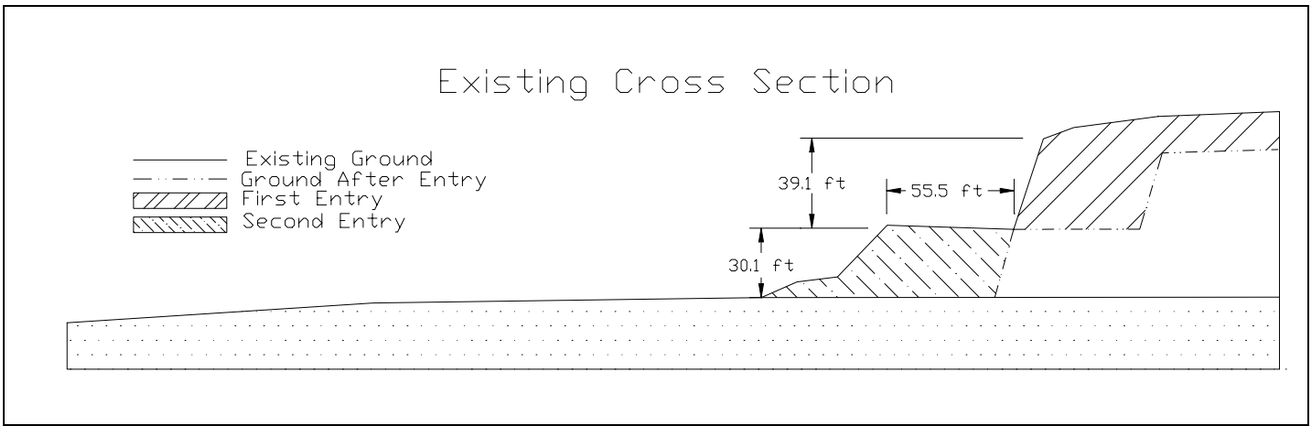
18. Upon completion of operations, the site shall be cleared of all temporary structures, equipment and rubbish, and shall be left in a neat and presentable condition.

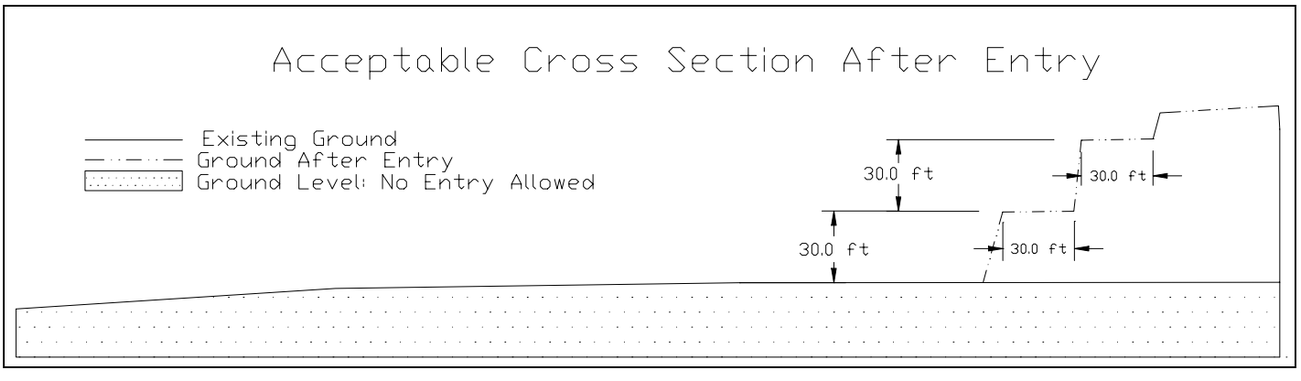
Date of update May 8, 2006.

Vicinity Map May Not Be to Scale









DEPARTMENT OF NATURAL RESOURCES - PACIFIC CASCADE REGION

FORM 9-87(Rev. 05-03)

SUMMARY - Road Development Costs

REGION: PACIFIC CASCADE

DISTRICT: Black Hills

SALE/PROJECT NAME: Out Cast CONTRACT NUMBER: 30-078809

LEGAL DESCRIPTION: SECTION 15, 17, 18, 29 & 32, TOWNSHIP 17 NORTH, RANGE 04 WEST, W.M.

ROAD NUMBER:	DC-Line, DC5000, DC5010, C2026A, C2024, C3115, C3116	C2028	DC-Line, C2020, C2026, C2028
ROAD STANDARD:	Construction	Reconstruction	Pre-haul maintenance
NUMBER OF STATIONS:	63.75	5.95	324.76
SIDESLOPE:	9-60%	25.00%	N/A
CLEARING AND GRUBBING:	$7,676	$581	
EXCAVATION AND FILL:	$30,889	$1,178	
MISC. MAINTENANCE:			$0
ROCK TOTALS (Cu. Yds.):			
Ballast: 8006	$84,000	$4,564	$0
Surface: 5085	$31,694	$3,958	$24,469
Riprap: 20	$86	$18	$12
CULVERTS AND FLUMES:	$5,430	$1,239	$679
STRUCTURES:	$0	$0	$0
GENERAL EXPENSES:	$12,782	$1,154	$2,264
MOBILIZATION:	$2,547	$2,547	$2,547
TOTAL COSTS:	$175,103	$15,237	$29,971
COST PER STATION:	$2,747	$2,560	$92

ROAD DEACTIVATION AND ABANDONMENT COSTS: $656

NOTE: This appraisal has no allowance for profit and risk.

TOTAL (All Roads) = $220,968

SALE VOLUME MBF = 6,000

TOTAL COST PER MBF = $36.83

Compiled by: Lou Beck Date: 05/08/06

PACIFIC CASCADE REGION - ROAD COST ESTIMATE - CONSTRUCTION

SALE NAME: Out Cast

CONTRACT NUMBER: 30-078809

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total	
DC-LINE EXT.	26	30	1.00	2.44	$48	1.20	12.33	$1,733	13.69
DC-LINE EXT.	60	30	1.00	4.11	$48	1.20	1.36	$322	63.75
DC5000	31	30	1.00	4.11	$40	1.00	11.00	$1,808	
DC5010	26	30	1.00	2.44	$40	1.00	10.12	$988	
C2024	9	30	1.00	2.44	$40	1.00	8.47	$827	
C2026A	24	30	1.00	2.44	$40	1.00	13.88	$1,355	
C3115	16	30	1.00	2.44	$40	1.00	2.40	$234	
C3116	11	30	1.00	2.44	$40	1.00	4.19	$409	

Clear and Grub TOTAL = $7,676

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
DC-LINE EXT.	26	1.0	2.25	$110	1.50	12.33	$4,578
DC-LINE EXT.	68	4.5	10.00	$110	1.50	1.00	$7,425
DC-LINE EXT.	53	4.5	6.75	$110	1.50	0.36	$1,804
DC5000	31	1.0	2.50	$88	1.00	11.00	$2,420
DC5010	26	1.0	2.25	$88	1.00	10.12	$2,004
C2024	9	1.0	1.25	$88	1.00	8.47	$932
C2026A	24	1.0	2.00	$88	1.00	13.88	$2,443
C3115	16	1.0	1.75	$88	1.00	2.40	$370
C3116	11	1.0	1.50	$88	1.00	4.19	$553

*End Haul, Over Haul, Large Fills/Cuts

	Equipment Type	Estimated Turn Time (hrs)	CY/Load	Estimated Vol. (cy)	No. of Equip. Hours	Cost/hour	Sub Total	
End Haul/ Over Haul	Truck	0.17	12	3730	52	$65	$3,354	Haul Dist = 300 ft Avg.
	Excavator	0.08	-	-	26	$138	$3,575	For loading trucks
	Dozer D5	-			8	$80	$640	For Waste Area
Removal of Rockpit Overburden	D8	-	-	900	6	$132	$792	(6 hrs @138$/hr)

Excavation TOTAL = $30,889

III. BALLAST AND SURFACING :

Ballast source: Low Bank Rockpit
Surface source: Low Bank Rockpit
Riprap source : Low Bank Rockpit

Description	cu.yds/sta x stations =	cubic yards
Ballast (3"-) Jaw Run	See Rock Lists	5,590
Surfacing (1 1/2"-) Low Bank Crushed and Maintenance		2,686
8 inch plus		15
(3"-) Crushed Maintenance Rock		2,000

UNIT COSTS	Ballast	Surfacing	8 inch plus	Maintenance
Drill & Shoot	$1.50	$1.50	-	$1.50
Dig and load	$0.75	$0.75	$1.00	$0.75
Crushing	$3.75	$4.50	-	$4.50
Purchase	-	-	-	-
Haul *	$3.86	$3.59	$3.86	$3.86
Spread	$0.80	$0.80	$0.80	$0.80
Compact	-	$0.45	-	-
Strip	-	-	-	-
Reclamation	-	-	-	-
Use tax	$0.21	$0.21	$0.08	$0.21
TOTAL ($/cy)	$10.87	$11.80	$5.74	$11.62

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

	Low Bank to Unit 1 & 2 avg. dist. to C2026A & C2024	**Low Bank to Unit 3** avg dist. to C3115 & C3116	**Low Bank to Units 1-3** avg dist. to DC-Line, DC 5000, DC5010, C2026A, C2024, C3115 & C3116
R.T. Miles =	4.2	4.3	4.7
Ave. Speed =	12	12	12
Delay (Hrs.)=	0.2	0.2	0.2
Cost / Hour =	$65.00	$65.00	$65.00
CY / Load =	10	10	10

Ballast (3"-) Jaw Run	5590	Cu. yds @	$10.87 /cu. yd =	$60,761
Surfacing (1 1/2"-) Low Bank Crushed and Maintenance	2686	Cu. yds @	$11.80 /cu. yd =	$31,694
8 inch plus	15	Cu. yds @	$5.74 /cu. yd =	$86
(3"-) Crushed Maintenance Rock	2000	Cu. yds @	$11.62 /cu. yd =	$23,239

Rock total = $115,780

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter	No/Length	Installed Cost/ft	Sub-total
	10		18	30	$11.10	$3,330
	2		18	32	$11.10	$710
	1		18	36	$11.10	$400
	1		24	36	$15.70	$565
downspout	2		18	15	$11.10	$333
Bands & Gaskets	13		18	1	$6.25	$81.25
	1		24	1	$10.20	$10.20

Culvert total = $5,430

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0
					$0
					$0

Structure total = $0

Sub-TOTAL = $159,774

0

VI. GENERAL EXPENSES: Overhead & General Exp. Add 8% $12,782

0

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100	5	$500
Grader	400	1	$400
Compactor	400	1	$400
Excavator	450	2	$900
Dozer D8)	400	1	$400
Front end loader	400	1	$400
Rock crusher	$4,000	1	$4,000
Drill	$400	1	$400
Dozer (D5)	$240	1	$240

Total Mobilization = $7,640 Mobilization sub-total = $2,547

Road No. DC-Line, DC5000, DC5010, C2026A, C2024, C3115, C3116
Standard: Construction
Stations: 63.75

SHEET TOTAL = $175,103

By: Lou Beck

Date: 05/08/06

PACIFIC CASCADE REGION - ROAD COST ESTIMATE - RECONSTRUCTION

SALE NAME: Out Cast

CONTRACT NUMBER: 30-078809

I. CLEARING AND GRUBBING:

Flat Rate -	% Side Slope	MBF/ac	Disposal Factor	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
C2028	25	30	1.00	2.44	$40	1	5.95	$581
			1.00	1.00	$40	1		$0
			1.00	1.00	$40	1		$0
				1.00				

Clear and Grub TOTAL = $581

II. EXCAVATION:

Flat Rate -	% Side Slope	Exc. Type Fact.	Production Factor	Cost/ Station	Width Factor	Total Stations	Sub Total
C2028	25	1.0	2.25	$88	1.00	5.95	$1,178
		4.0	1.00	$88	1.00		$0
		4.0	1.00	$88	1.00		$0
		4.0	1.00	$88	1.00		$0
			1.00				$0

Excavation TOTAL = $1,178

III. BALLAST AND SURFACING :

Ballast source: Low Bank Rockpit
Surface source: Low Bank Rockpit
Riprap source : Low Bank Rockpit

Description	cu.yds/sta x stations =	cubic yards
Ballast (3"-) Jaw Run		416
Surfacing (1 1/2"-) Low Bank Crushed		334
8 inch plus		3

UNIT COSTS	Ballast	Surfacing	8 inch plus
Drill & Shoot	$1.50	$1.50	-
Dig and load	$0.75	$0.75	$1.00
Crushing	$3.75	$4.50	-
Purchase	-	-	-
Haul *	$3.64	$3.64	$3.64
Spread	$0.80	$0.80	$1.20
Compact	$0.45	$0.45	-
Strip	-	-	-
Reclamation	-	-	-
Use tax	$0.08	$0.21	$0.08
TOTAL ($/cy)	$10.97	$11.85	$5.92

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

Low Bank to Unit 1

R.T. Miles =	4.2
Ave. Speed =	12
Delay (Hrs.)=	0.2
Cost / Hour =	$66.00
CY / Load =	10

$656

Ballast (3"-) Jaw Run	416	Cu. yds @	$10.97	/cu. yd =	$4,564
Surfacing (1 1/2"-) Low Bank Crushed	334	Cu. yds @	$11.85	/cu. yd =	$3,958
8 inch plus	3	Cu. yds @	$5.92	/cu. yd =	$18

Rock total = $8,539

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	No/Length (ft)	Installed Cost/ft (Bands & Gaskets Included)	Sub-total
	1		24	56	$15.70	$879
	1		18	30	$11.10	$333
Bands & Gaskets	2		24	1	$10.20	$20
	1		18	1	$6.25	$6

Culvert total = $1,239

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0
					$0
					$0

Structure total = $0

Sub-TOTAL = $11,537

VI. GENERAL EXPENSES: Overhead & General Exp. Add 10% $1,154

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	$100	5	$500
Grader	$400	1	$400
Compactor	$400	1	$400
Excavator	$450	2	$900
Dozer D8)	$400	1	$400
Front end loader	$400	1	$400
Rock crusher	$4,000	1	$4,000
Drill	$400	1	$400
Dozer (D5)	$240	1	$240

Total Mobilization = $7,640

Mobilization sub-total = $2,547

Road No. C2028
Standard: Reconstruction
Stations: 5.95

SHEET TOTAL = $15,237

By: Lou Beck

Date: 05/08/06

PACIFIC CASCADE REGION - ROAD COST ESTIMATE - PRE-HAUL MAINTENANCE

SALE NAME: Out Cast

CONTRACT NUMBER: 30-078809

Total stations Pre-Haul Maintenance = 324.76

I. MISC. MAINTENANCE ITEMS:

	Cost/ Station	Total Stations	Sub Total
mechanical brushing =	20.00		$0
hand brushing =			$0
ditch cleaning =	39.00	4.30	$168
grading =	5.50	324.76	$1,786
culvert cleanout =	50.00	4.00	$200
			$0
			$0
			$0
			$0
			$0
			$0
			$0
			$0
			$0

Misc TOTAL = $2,154

III. BALLAST AND SURFACING :

Ballast source: -
Surface source: Low Bank Rockpit
Riprap source : Low Bank Rockpit

UNIT COSTS	Ballast	Surfacing	8 inch plus
Drill & Shoot		$1.50	-
Dig and load		$0.75	$1.00
Crushing		$4.50	-
Purchase		-	-
Haul *	$3.64	$3.64	$3.91
Spread		$0.80	$1.20
Compact		$0.45	-
Strip		-	-
Reclamation		-	-
Use tax	$0.08	$0.21	$0.08
TOTAL ($/cy)	$3.72	$11.85	$6.19

Description	cu.yds/sta x stations =	cubic yards
Ballast (3.5"-)		0
Surfacing (1 1/2"-) Low Bank Crushed		2,065
8 inch plus		2

* Haul Formula: (R.T.Miles/MPH+Delay)($/hr / Cy/load)

From Low Bank		Low Bank to Units 1-3	
R.T. Miles =	4.2	R.T. Miles =	4.7
Ave. Speed =	12	Ave. Speed =	12
Delay (Hrs.)=	0.2	Delay (Hrs.)=	0.2
Cost / Hour =	$66.00	Cost / Hour =	$66.00
CY / Load =	10	CY / Load =	10

656

Ballast (3.5"-)	0	Cu. yds @	$3.72	/cu. yd =	$0
Surfacing (1 1/2	2065	Cu. yds @	$11.85	/cu. yd =	$24,469
8 inch plus	2	Cu. yds @	$6.19	/cu. yd =	$12

Rock total = $24,482

IV. CULVERTS AND FLUMES:

Description	Qty.	Gauge	Diameter (in.)	No/Length (ft)	Installed Cost/ft (Bands & Gaskets Included)	Sub-total
DC-Line	1		18	30	$11.10	$333
C2020 rd	1		18	30	$11.10	$333
						$0
						$0
						$0
Bands & Gaskets	2		18	1	6.25	$13

Culvert total = $679

V. STRUCTURES

Description	Type	Width	Length	Cost/ft.	Sub-total
					$0
					$0
					$0

Structure total = $0

Sub-TOTAL = $25,160

VI. GENERAL EXPENSES: Overhead & General Exp. Add 9% $2,264

VII. MOBILIZATION:

* Move in costs are averaged over all three sheets.

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100	5	$500
Grader	400	1	$400
Compactor	400	1	$400
Excavator	450	2	$900
Dozer D8)	400	1	$400
Front end loader	400	1	$400
Rock crusher	$4,000	1	$4,000
Dozer (D5)	$240	1	$240

Total Mobilization = $7,640

Mobilization sub-total = $2,547

Road No. C2028
Standard: Pre-haul maintenance
Stations: 324.76

SHEET TOTAL = $29,971

By: Lou Beck

Date: 05/08/06

PACIFIC CASCADE REGION - ROAD COST ESTIMATE - ABANDONMENT

SALE NAME: Out Cast CONTRACT NUMBER: 30-078809

Total stations Road Closure = 2.25

I. MISC. ROAD CLOSURE COSTS:

	# of operations	Time(hr)/operation	Total Time (hr)	Cost/hour	Cost/ Station	Total Stations	Sub Total
water barring =	2.00	0.33	1	100		2.25	$66
grass seeding =					$8.00	2	$18
tank trapping =	1.00	1	1	100		1	$100
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0
							$0

Misc TOTAL = $184

VI. GENERAL EXPENSES: Overhead & General Exp. Add 12% $22

VII. MOBILIZATION:

Description	$ per Move	# of Moves	Sub-total
Dump Trucks	100		$0
Grader	400		$0
Compactor	400		$0
Excavator	450	1	$450
Dozer D8)	400		$0
Front end loader	400		$0
Rock crusher	$4,000		$0
Dozer (D5)	$240		$0

* These move in costs are separate since they will occur after logging is done

Total Mobilization = $450

Road No. C2028
Standard: Road Closure
Stations: 2.25

SHEET TOTAL = $656

By: Lou Beck Sheet 5 of 5 Date: 05/08/06